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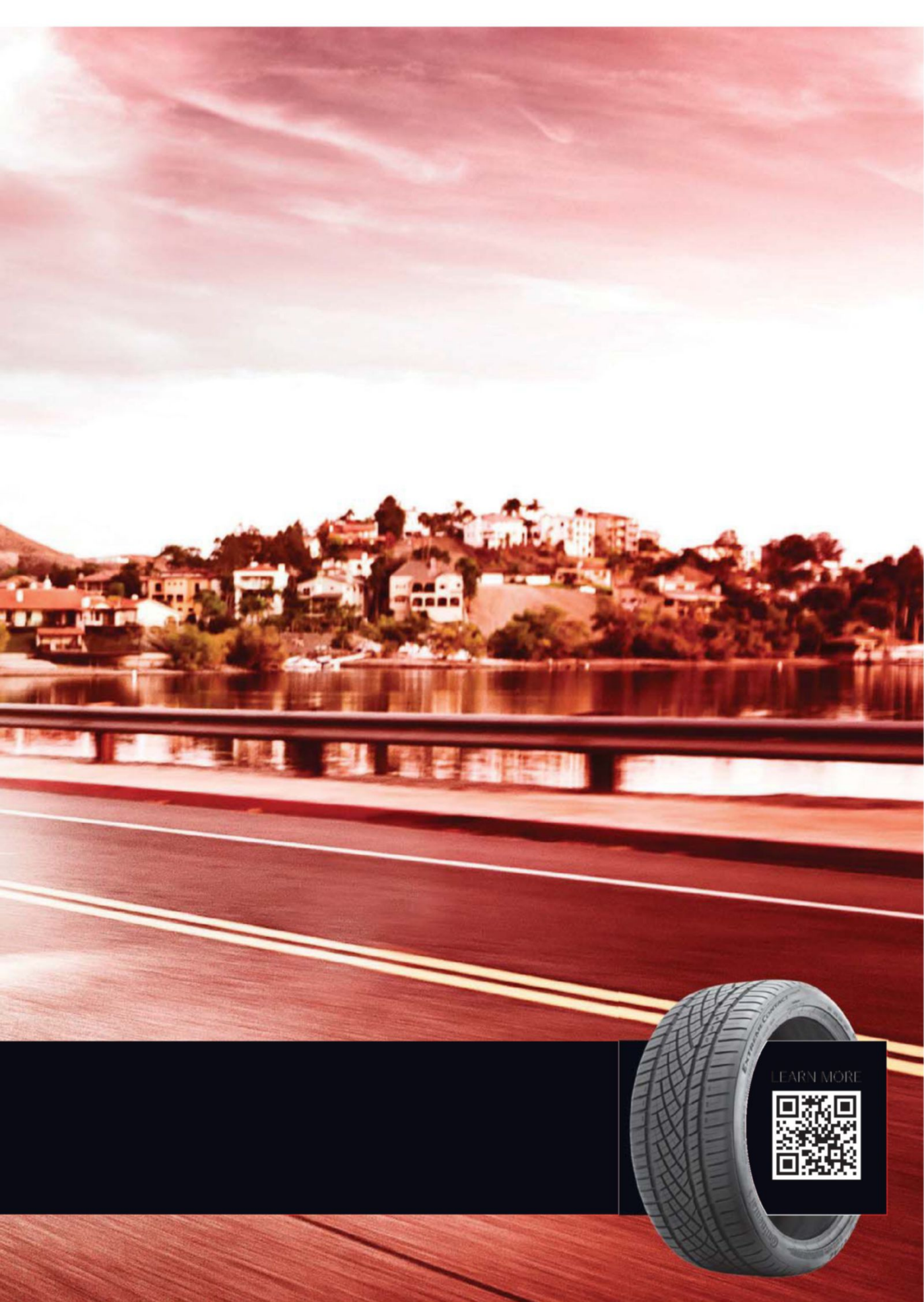


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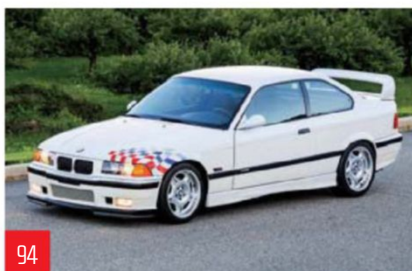
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Join the Club

I spend a decent amount of time in Germany, more than my family would like. To be accurate, my wife and son are more disgruntled with the ratio of time I'm in Germany compared to the time they're in Germany. I don't think I would get nearly the complaints if they were sitting trackside eating gummies while daddy was driving the latest and greatest.

I love my time in Germany. Sadly, my trips are packed with so much work, it is rare I get to be a tourist. Contrary to our American stereotypes, I find Germans to be exceptionally welcoming, friendly, and even funny. Another standout quality is the love of process and precision. It's something I feel is in the German DNA. From what I've seen, they just can't help themselves but to follow and perfect a process, especially anything that requires a level of workmanship.

I stay at the Steigenberger Airport Hotel outside of Frankfurt Airport at least twice a year. It is a few minutes ride to the main terminal on a shuttle that runs every 15 minutes, like clockwork. The hotel isn't particularly expensive at roughly \$100 U.S. a night, but is remarkably clean, inviting for a monolith, and has some decent restaurants. As anyone in the know will tell you, the hot ticket at the Steigenberger is the club sandwich at the bar.

Before I started traveling, I thought we Americans had the lock on the club sandwich. We, supposedly, invented the thing at a gentlemen's club—not that kind of gentlemen's club—in Saratoga Springs, New York, in the late 1800s. As in so many other cases, I was wrong and I've learned firsthand the Germans found a way to make it better.

A club is not complicated. Start with a simple white bread, not the sugary stuff we get in the States but something that tastes of wheat and yeast, but is still subtle. Toast. It needs to be golden and uniform, but done quickly so the browning from the Maillard reaction—it isn't caramelization, there's amino acids in there—is just on the very top layer of the bread's crumb and stays soft and moist inside. A generous coating of mayonnaise is slathered on the inside of both the top and bottom pieces of toast. German mayo is tinted yellow; it isn't viscous white fat, like what you find in the U.S. The turkey is all-white meat, freshly roasted and sliced to an eighth of an inch thick. The turkey is flavorful, so not a lot is needed; it's about

restraint and balance. The bacon is the smoky, salty component that defines a club. More importantly, it isn't overcooked. It is crispy but doesn't turn to bacon bits on the first bite. They consider the integrity of the sandwich as a whole.

This club does employ traditional iceberg lettuce, but not to add bulk. The wrinkles of the lettuce provide some void area to allow the ketchup, yes tomato ketchup, to pool up. The sweetness of the ketchup contrasts with the savoriness of the bacon. But there is something else, something that manages to elevate the sandwich to a level above. A fried egg. One perfectly fried egg that adds a layer of buttery crispness from the white and then a quality, almost like cheese, in the yolk. It's a surprise, a bold one at that, but so well planned.

The club sandwich is a relatively simple thing elevated to another level through development, planning, and the boldness to take chances that diners probably wouldn't have requested.

After my stay in Frankfurt, I traveled a few hours north to drive the new Porsche GT3 RS. A car that is, in my opinion, the current top of the 911 model range. The Turbo S has more power and all-wheel drive, but all that power overshadows the car's other attributes. The 911 GTS is an astounding all-around car, but there isn't a 500hp fried egg or the zing of 760 pounds of downforce that sneak up on you and make new synopsis fire when you are really pushing hard.

I don't want to spoil the review of the car, but everything about the GT3 RS is well balanced. Nothing jumps out as the "thing" that makes it. All the systems of the car work in harmony, and they are optimized through a constant process of development that has been taking place over the last 50 years of 911 development. There are technologies that are unexpected, but nothing detracts from the overall 911-ness of the car. Everything from the PDK transmission to the rear-wheel steering are systems that you wouldn't have dreamed of being on a GT3 RS 15 or even 10 years ago. Here they are, maybe unrequested, but in the end, they will never be unappreciated.

We say we want simple things, but in the same breath we demand improvement. Progress without change is impossible, but change doesn't have to mean going away from your original ideal.

Michael Febbo, Editor
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MEA CULPA

In the July Issue of *European Car*, some of you may have noticed a spelling error in Tuning Solution. The feature focuses on AEM's new Infinity ECU for Porsche 996 and 997 Twin Turbo applications. We misspelled the product name, Infiniti, like the car company. We can't apologize enough, and I assure you, if we had a full-time copy editor on staff, that person would pay dearly.

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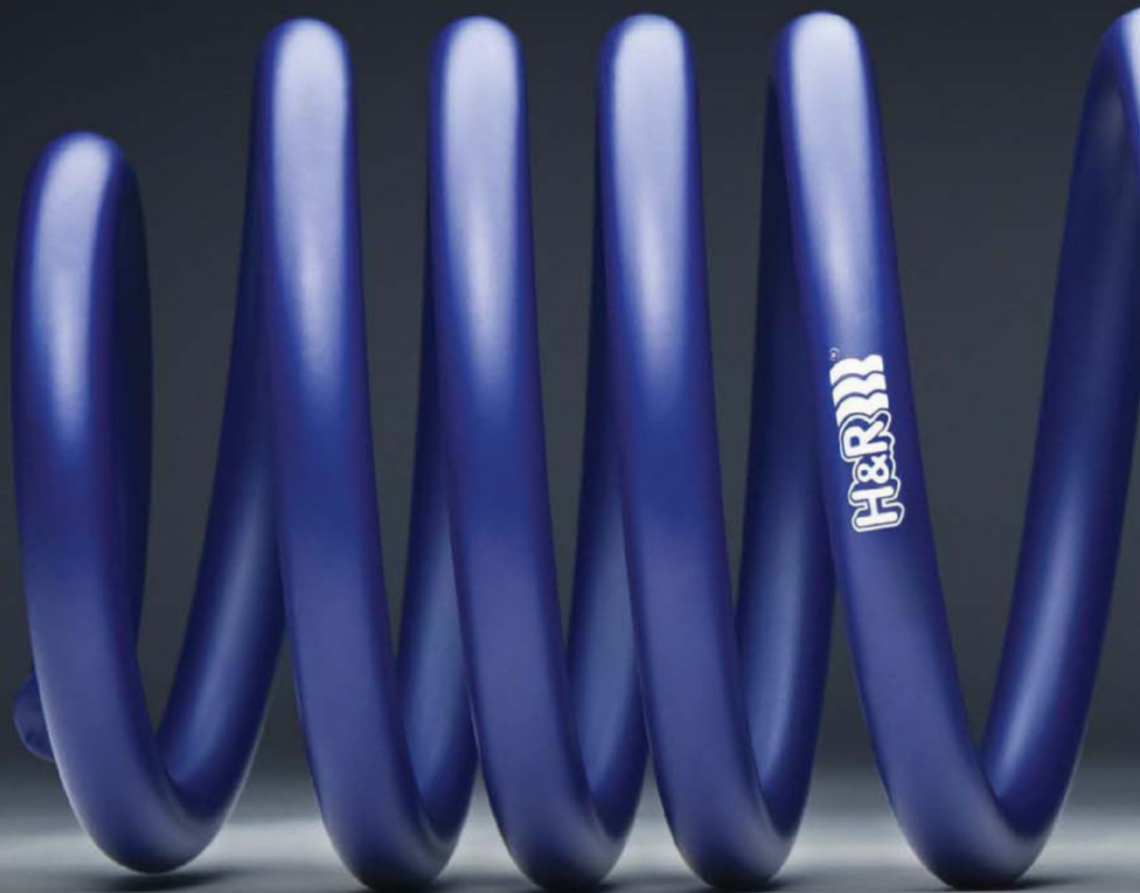


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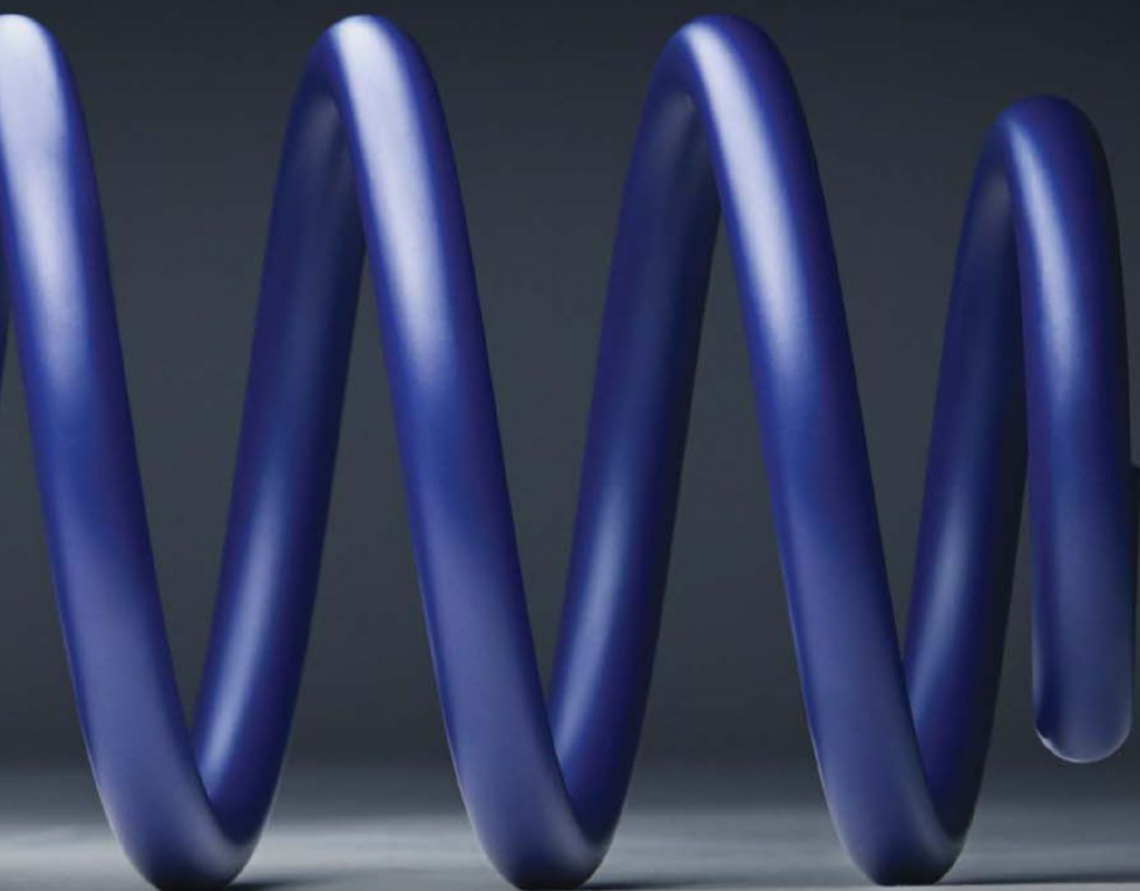
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pipercrossusa.com



DINAN ADJUSTABLE COILOVER SYSTEM

Does Dinan's ingenuity know no bounds? Here is an adjustable coilover system for the F80/F82 BMW M3/M4 that retains the factory electronic damper control shock absorbers and deploys threaded collars to let the user lower the ride height by an inch in the front and 1.5 inches at the rear. Dinan claims a "substantial" reduction in body roll, less dive under braking, and decreased acceleration squat. Spring rates are increased by 50 percent up front, 10 percent out back. Construction is 6061-T6 aluminum with a black anodized finish. \$1,599.

dinancars.com



FORGE MOTORSPORT INDUCTION SYSTEM

This is for the 997 generation of the Porsche 911. The cowl is made from carbon fiber, saving weight and bringing a touch of motorsport style, a domed air filter maximizes surface area, filtration goes down to a finer level, airflow is said to be improved by 30 percent over OEM filters, and Forge even claims a few more tingles down the spine when the induction snort is heard. \$1,000.

foragemotorsport.com



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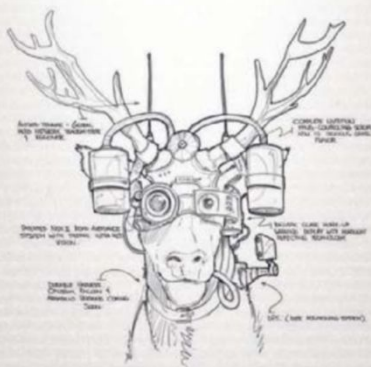
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roadracemotorsports.com



STARTECH WIDEBODY KIT

For those Range Rover Sport owners who want to go down a different avenue, this wide-body kit offers aerodynamic enhancements, daytime running lights, ride height lowering module, fender flares, 23-inch forged alloys, a sporty-sounding exhaust system, and even some interior upgrades. Startech is affiliated with Brabus. It hasn't quoted a starting price on this stuff, but the whole kit is around \$30,000.

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eni.com/na

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hrewheels.com



AEM INFINITY ECU

Titan of tuning, AEM, has expanded the functionality of its standalone Infinity ECU for the Porsche 997 so it plugs and plays nicely with the '05 to '08 Carrera/Targa/GT3, as well as naturally aspirated and turbocharged models. It features full drive-by-wire and VarioCam Plus control, plus throttle maps, traction control, and data logging. The company claims this unit has the fastest processing speed of any aftermarket motorsport ECU, allowing the user to do more, faster, and in a more stable programming environment. Installation takes about an hour using the factory sensors. A comprehensive package goes for \$3,800.

aemelectronics.com





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ultraracinguk.co.uk



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essexparts.com



KW VARIANT 3 COILOVERS

Whenever someone thinks about upgrading his or her coilovers, KW Variants are usually on the list (or should be). The latest car to get the KW treatment is the '15 BMW M4 (F83) coupe. They allow the front and rear to be lowered by 1.57 inches (40 mm), plus adjustable rebound and compression damping. High-speed damping, though, is pre-set by KW's engineers. The whole stainless steel caboodle is TÜV-approved. From \$2,850.

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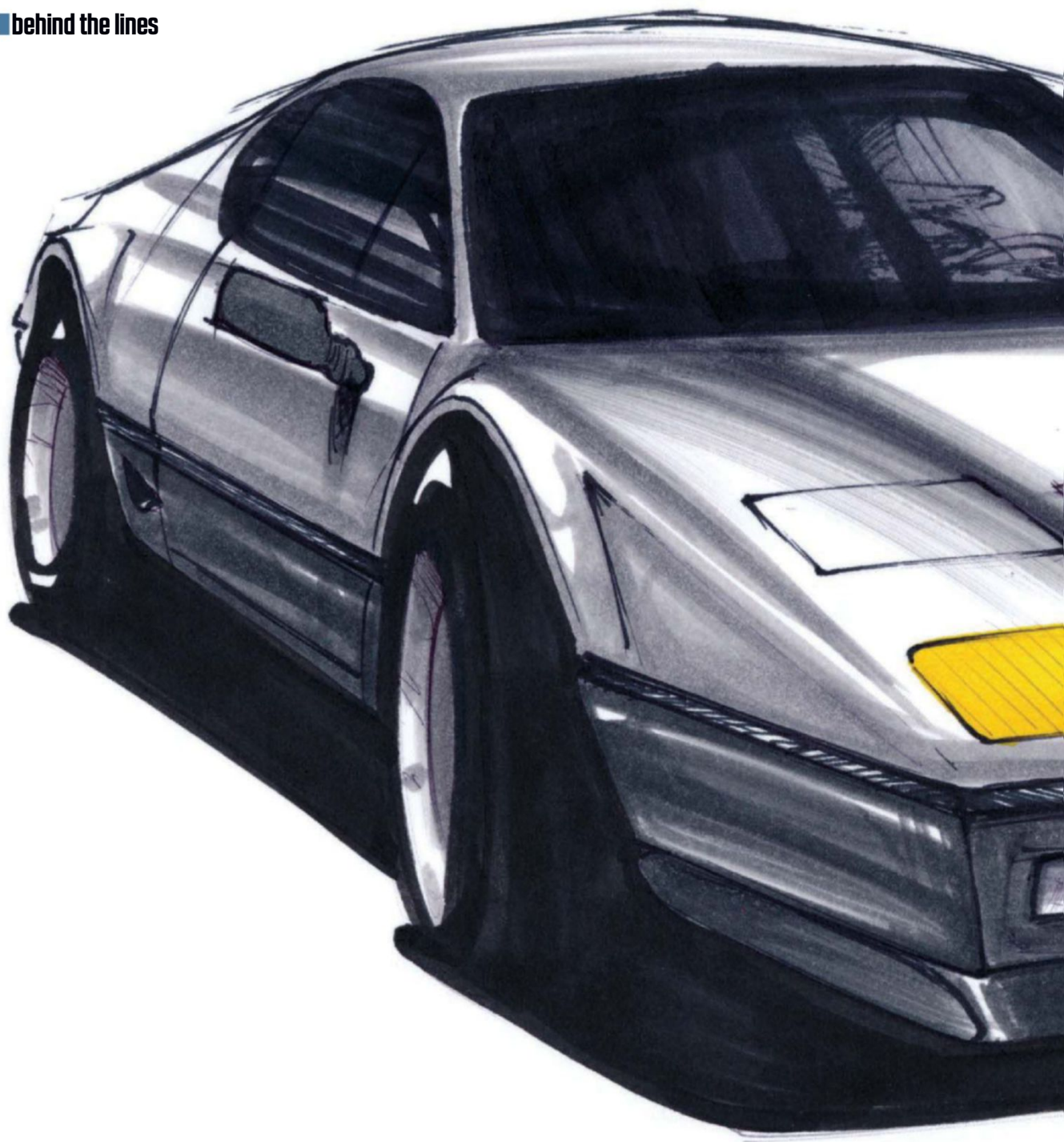


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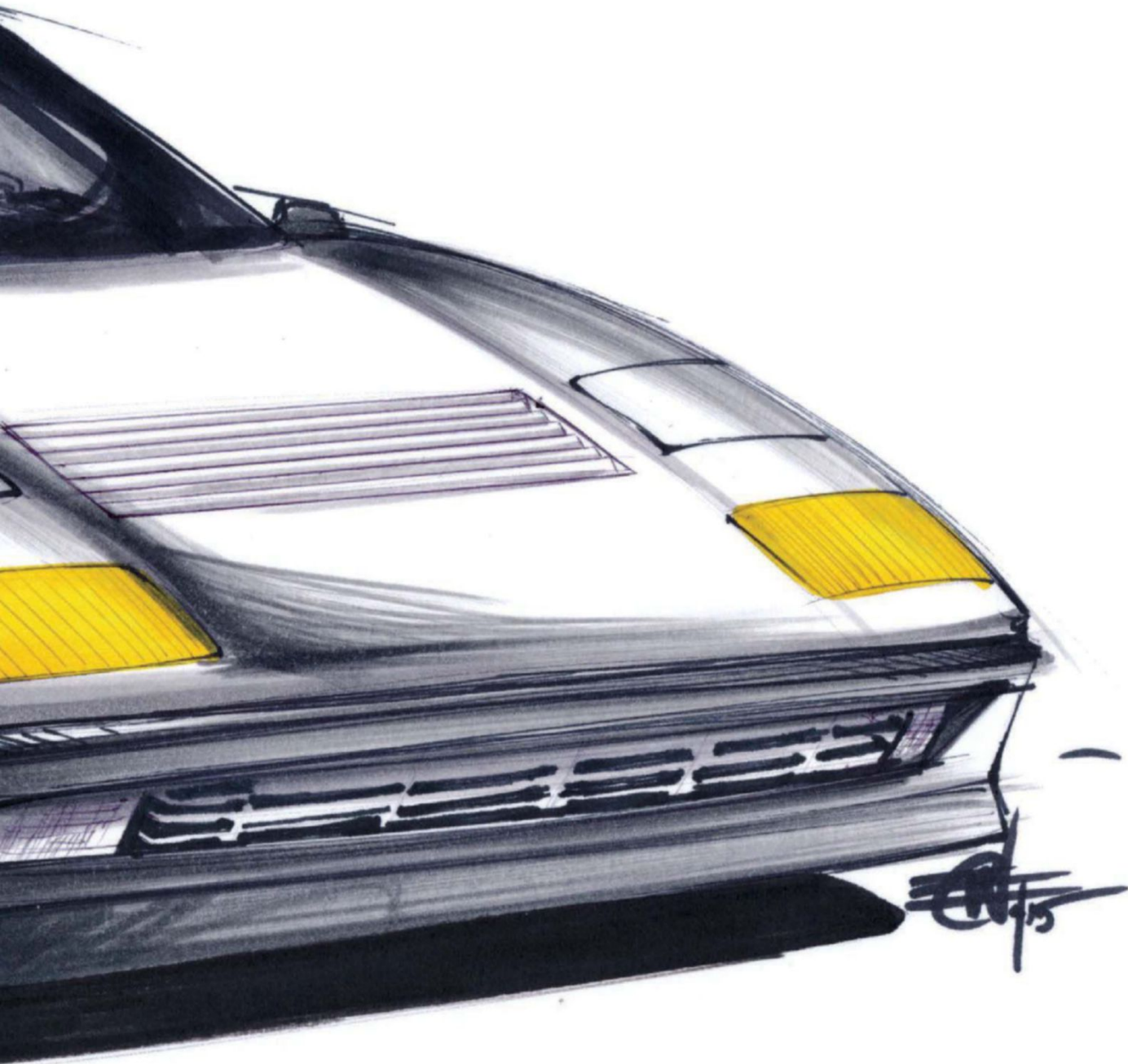




Unforgettable

FERRARI CREATES CLASSICS, SOMETIMES WITHOUT KNOWING

Words & Illustrations Ezekiel Wheeler

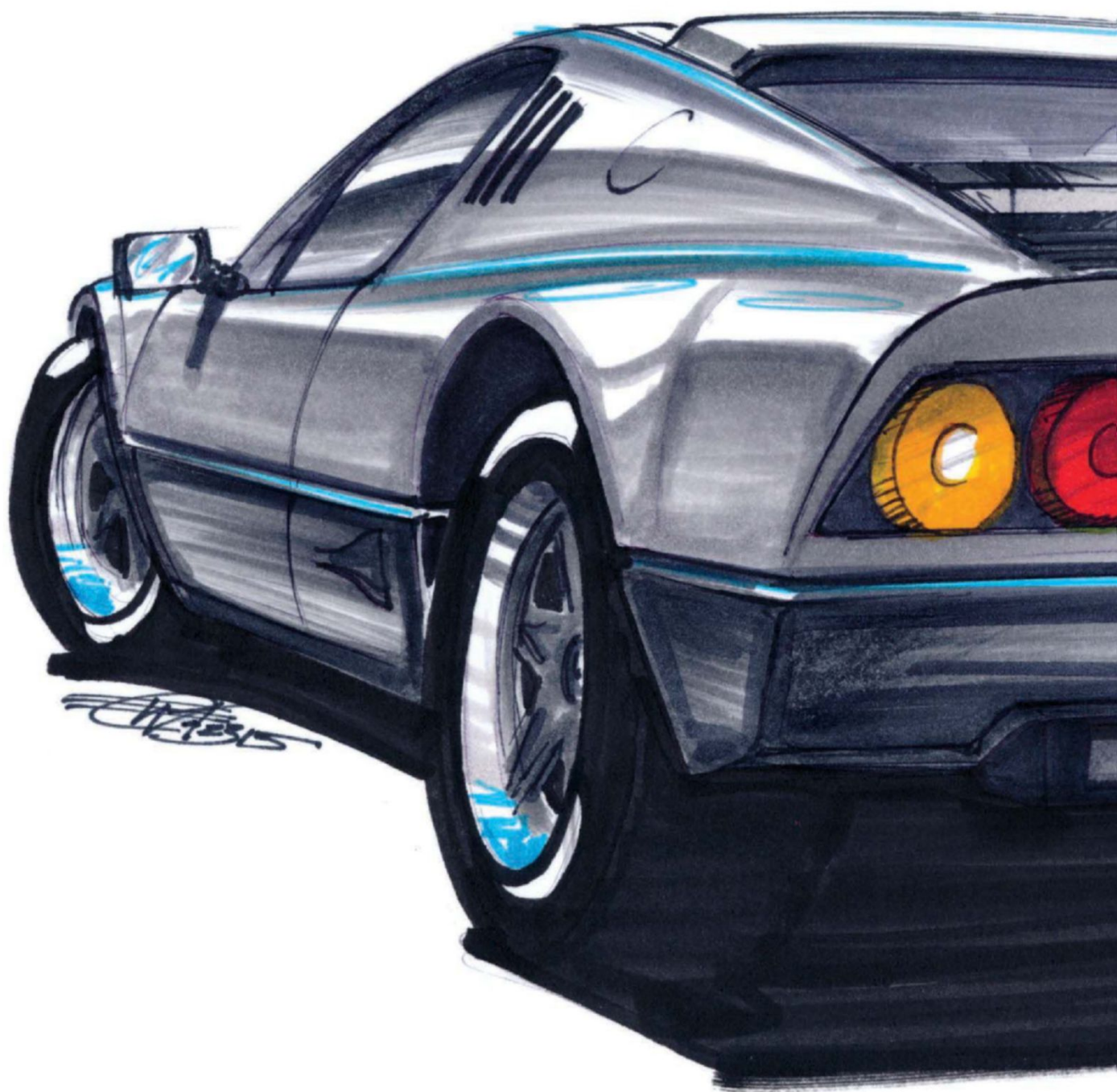


Is it possible for Ferrari to create vehicles worth forgetting? Think about it. When the dream cars are all gobbled up and the wrecked ones all restored beyond reasonable taste and budgets, what's left? The nameplates that helped the brand survive during its most difficult moments. The Dino was a sub-brand spin-off with half the amount of cylinders expected from prancing horses at the time. The 308 was madness in the form of '80s excess, and the more contemporary 360 and 430 have been overshadowed by the 458 Italia, dubbing them "so 2000 and late." Sure they make the right noises, but they are easily overlooked today by their more curvaceous and powerful counterparts. So I'll ask the question again: Does Ferrari create vehicles worth forgetting?

I present the 512 Berlinetta Boxer (or BB as it was affectionately known). When it was launched in the late '70s, Ferrari pumped up the displacement of its flat-12 to create 360 hp and added a bit more bodywork to the already dated-looking 356 GT4 BB.

The wide, menacing stance with protruding fender arches gave more of a LeMans racer feel as opposed to a refined GT look. Considering Lamborghini was garnering all of the attention thanks to its Countach, Ferrari needed to do something. Anything! The 512 BB was that thing. While it slipped into distant memory for most in the past 20 to 30 years, it's come back with a vengeance. This "live wide" craze we now find the aftermarket and modern companies following seems to have influenced collectors.


"While it slipped into distant memory for most in the past 20 to 30 years, it's come back with a vengeance."





The designers at Pininfarina integrated a NACA duct in the rocker panels that aided cooling the exhaust. The front end received an integrated chin spoiler and out back, the three-light setup was ditched in favor of a more contemporary, at the time, two-light setup. Overall, the wedge sexiness (brought on by those devils at Lamborghini) was maintained, and a solid-black, mid-body belt was the fashion of the era. This line served as a visual breakup of the body, giving a lower look while incorporating the natural cut lines of the clamshell hood and rear engine cover. While design changes were modest on the updated 512, just under 1,000 units were created. Not a single one was

made for sale in the United States, primarily because Enzo Ferrari wanted nothing to do with the regulations in the United States at the time, so third party sellers were the American ticket to owning one.

Today, these V-12 wedges easily cross the block in the low- to mid-six-figure range, some even skirting the half-million-dollar hammer price. Less than half a decade ago, prices for 512 bb examples hovered between \$50-80,000. So, does Ferrari create vehicles worth forgetting? If that's the case, you'd better snap up as many F1 tribute 360 Maranello Spiders and F430 Scuderias as you can. Before you know it, they'll be earning more. 

“Overall, the wedge sexiness was maintained, and a solid-black, mid-body belt was the fashion of the era.”



VISION MIXER

Kudos to Mini for being on the cutting edge. The company's new Augmented Vision prototype uses augmented reality to provide a driver with more information and safety. As well as a head-up display of speed and speed limits, it (in a virtual way) eliminates the A-pillar, a common hindrance to visibility. It can also help out with parallel parking, then provide navigation for that last part of the trip once the car is parked. And it does all this with what looks like a pair of glasses. No word yet on what happens when the driver already has to wear glasses or sunglasses.



MERCEDES-BENZ, PICKUP ARTIST

In the quest for dominance of ever more diverse segments, Mercedes-Benz has announced it will make a luxury midsize pickup with a double cab, built in collaboration with the Renault/Nissan conglomerate. Launch date is around 2020, and there's a strong chance it will go on sale in the United States. Maybe there's a "classy redneck" niche that has been ignored up until now. If there is a market, how long might it take before BMW and Audi feel obliged to compete? Could Audi get away with a re-badged VW Amarok? And what's the betting on an AMG version? Surely the guys at Affalterbach would love to make one, just to prove it could be done. To be fair, Mercedes-Benz does have a track record of making fine commercial vehicles, so this isn't much of a stretch. No name has been given yet, but given it's a truck, how about the T-Class?



DIAL D FOR DIESEL

Some people might be wondering why German carmakers are so into diesel when everyone else seems to be embracing hybrids. This might be the answer. It could actually be the answer to many things. Audi recently announced that it has created synthetic diesel using carbon dioxide and water, then ran an A8 3.0 TDI with it. The company says this fuel has "virtually no impact on the climate." It's free of sulfur and aromatic hydrocarbons and can be mixed with the fossilized stuff or used by itself. The next target is to manufacture around 800 gallons in the coming months. That's a drop in the crude ocean, but a significant step all the same.



QUICK ON THE DRAW

Jaguar wants to create a new halo sports car. And a new two-plus-two "four-door coupe" interior. To accomplish these tasks, the company has enlisted the help of two car design schools in the United States: the Art Center College of Design in Pasadena, alma mater of Chris Bangle, Henrik Fisker, Frank Stephenson, and Freeman Thomas (among many others); and the Academy of Art University in San Francisco (famous alum, er, Heidi Montag). The NorCal crowd will concentrate on interiors while the SoCal faction gets busy on the sports car. They have 12 weeks to get their digital and clay concepts together before the August deadline, but they will have help from Jag design chief Ian Callum. Just one hiccup: If these cars ever make it into production, it won't be until at least 2030.

DIALED IN

Auto Meter Products, the company so many of us look to for fine gauges, has acquired Palmer Performance Engineering. What it means to us is that Auto Meter now has the DashCommand app, which can turn a smartphone or tablet into a customized dashboard and diagnostic tool, along with several other ingenious plug-and-play modules that display a greater number of car functions. So there's some exciting technology under the wing of a well-known and trusted name.

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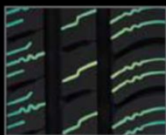
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'15 Audi RS3 Sportback

PRACTICALLY PERFECT. BUT WILL WE GET IT?

Words & Photos Ian Kueh

Edging out the more expensive A45 AMG by 7 hp, the new 367hp Audi RS3 is the hottest hatch money can buy. However, the second-generation RS3 has a few more tricks up its sleeve over and above just raw speed. A long motorway journey proves that the RS3 is not just a one-trick pony. Loping along with the five-cylinder motor ticking over at relatively low revs, it is also a civilized travelling partner that can cover big distances without tiring out its occupants.

The most obvious visual clues to the RS3's performance credentials are the extended front wheel arches, the bigger air intakes, and aluminum trim on the bumpers. The two, big, oval exhaust outlets will be the most obvious to other hot-hatch drivers as the RS3 speeds off.

The front arches have been extended by 0.7 inches on each side to cover the 1-inch-wider front track. The rear is 0.2 inches wider. As the suspension arms are unchanged, the extra track width has been gained through wider wheels with appropriate offsets and larger tires.

Based on the same MQB platform as the VW Golf Mk 7 and Audi TT, the RS3 has MacPherson struts in front with a multi-link rear axle. As the five-cylinder

motor with its attendant turbocharger and inter-cooler package is around 44 pounds heavier than the 2.0T FSI that sits in the nose of the less potent S3, some components have been moved aft to compensate. The engineers shifted the battery to the trunk and moved the updated version of the Haldex electro-hydraulic, multi-plate clutch that does the work of shuffling power fore and aft to the rear axle.

As this clutch assembly weighs more than 100 pounds, the effect of moving it aft is significant to the front/rear weight distribution. In the process, this clutch unit has shed 3 pounds, as it no longer requires a pressure accumulator. The RS3 thus ends up with a similar front/rear weight distribution to the S3, although its polar moments of inertia are naturally higher.

A nose-heavy car will always have a tendency to understeer, and the transverse-engined RS3 has a 59/41 percent front/rear weight distribution. To help counter this, Audi offers customers the option of wider 255/30ZR19 tires on the front wheels and 235/35ZR19s at the rear on 19x8.5-inch-wide alloys, while the standard footwear is 235/35ZR19 rubber on 19x8.0-inch alloys all round.



Audi says the rear differential can handle from 50 to 100 percent of engine torque, with limit handling balance also adjustable via the torque vectoring function, which encourages a more neutral line through turns at the limits. The heart of any car is its engine, and in this respect, the new RS3 has as strong and lively a heart as anyone could wish for. Up to this point, Audi's EA855 2.5L, five-cylinder motor had won four consecutive Engine of the Year awards, already something of a record. At the RS3 launch, Audi told us it had just won this accolade for the fifth year running.

Things have not stood still in the intervening years, and there is far more to the latest version of this iconic motor than just a few more horses. For instance, the onerous EU6 emissions standard has required all current engines to be fine-tuned in many ways, and given that the five-cylinder was originally designed to meet EU5 standards, a number of changes have been made to upgrade its efficiency.

"This goes as deep as material sciences in terms of metallurgy and surface coatings to reduce internal friction and reduce fuel consumption through improved efficiency," explained Tobias Klatt, technical project leader for the new RS3.

"The 2.5 TFSI motor made 360 hp in the old TT RS and 340 hp in the previous RS3," he recalled. "The latest RS3 is based on the same MQB platform as our new TT, and this required a revision of the major external components of the 2.5 TFSI to make it a slightly more compact package."



The improved engine features reduced internal friction thanks to a new coating process on the cylinder walls and matching pistons. "Reducing the overall dimensions slightly involved revising the intake manifold, plenum, and throttle body design, which now generate better intake air ram effect. This and the redesigned oil cooler and oil filter are a bit lighter, too," Tobias said.

"That five-cylinder motor is a peach. Crisp throttle response and a warbling soundtrack to die for endorse its Engine of the Year credentials."





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The turbocharger unit is the same size as its predecessor, but the scroll has been optimized for better airflow, and it now provides up to 19 psi of boost. The air filter, intake, and exhaust systems have less restriction, and the nine-row intercooler is larger and more efficient.

New fuel injectors and ECU software provide up to three fuel pulses per cycle instead of the previous two, which makes for more accurate fueling. "However, this is dependent on the load, revs, and throttle position," Tobias explained. "Under full-throttle, high-load conditions, the system will deliver three pulses—one early and two later in the firing sequence. But under light-load conditions, such as in town or when cruising on a small throttle opening, the system delivers two pulses."

"The previous fuel injection system had a rail pressure of 120 to 130 bar, and we now have 130 to 140 bar," he continued.

"Compression ratio is also up from 10.0:1 to 10.4:1. Finally, the ECU is remapped to maximize the effect of these changes, which add up to a fuel economy improvement of 12 percent."

With outputs of 367 hp between 5,500 and 6,800 rpm, with 343 lb-ft of torque between 1,625 and 5,500 rpm, the new RS3 impresses against the stopwatch, its 4.3-second 0-62-mph time, and thus pips the A4S AMG to the post by 0.3 second. Top speed is electronically limited to 155 mph unless you pay extra to have it delimited to 174 mph.

The upshot of all these improvements is better flexibility and throttle response, together with faster shifting for the seven-speed twin-clutch transmission. Thus, at 3,351 pounds, the 121-pound lighter and more powerful second-generation RS3 is livelier and more responsive at all engine speeds, not just at the top end.



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“The ride height is about the same as the S3’s, but you can’t make a direct comparison of spring and damper rates because the five-cylinder motor is 44 pounds heavier.”

With a power-to-weight ratio of 9 pounds per horsepower, the rorty five-pot motor now feels less stressed when asked to punch an RS3-sized hole through the air, and seems to breathe better at high revs, too.

Audi has also improved the shifting times for the seven-speed S-Tronic dual-clutch gearbox that transmits the engine power to the wheels via the quattro 4WD system.

As the dual-clutch system gains its speed advantage from having the incoming and outgoing gears rotating simultaneously, the engineers explained that any gain in shift speed comes from the software application. The new RS3 has improved shifting protocols to speed things up, but quite frankly, the shifting is so rapid, any talk of millisecond improvements is academic.

The software is also programmed for a diametrically opposed shift experience in Comfort and Sport modes. In the former, it slips from ratio to ratio as smoothly as the torque converter auto in a stretched limo. In Sport mode, it takes on a distinctly urgent feel with a minor jolt as the next ratio up is engaged and the sound-flap-equipped sports exhaust gives out a corresponding sporty blarp.

Chassis engineer Meic Diessner mapped out for me what quattro GmbH had done to the MQB platform to prepare it for this level of power. “The RS3 chassis is based on the work we did for the S3,” he explained.

“The ride height is about the same as the S3’s, but you can’t make a direct comparison of spring and damper rates because the five-cylinder motor is 44 pounds heavier. This requires new front spring and damper rates, which then have to be matched at the rear axle.”

As on the S3, the tubes of the MacPherson struts in front are made from aluminum for lower weight. These are a different design to accommodate the new pivot bearing housing required for the revised suspension geometry with increased negative camber.

Out of the box, the RS3 has 235/35ZR19 tires all round, but larger 255/30ZR19 rubber for the front is an option, and the wider contact patch helps to improve front-end grip, especially on track.

The standard issue steel brakes use Audi’s distinctive wave-pattern vented discs; 14.6-inch diameter in front, clamped by eight-pot calipers, and 12.2 inches at the rear with single pot calipers. The optional ceramic brakes use 14.6-inch discs in front and save 28.7 pounds.

The blue car I drove had the Comfort package with the active cruise control system. The RS package includes replacing the lovely wing-backed sports seats with deeper RS race-style seats, which save 15.4 pounds, and the “quattro” logo in the lower area of the front under-bumper intake grill.

The standard suspension uses steel springs and conventional dampers, but a magnetic ride option will be available shortly, providing adaptive damping. Controlled via the Audi Drive Select System, this gives you the choice of Comfort, Automatic, Dynamic, and Individual for the throttle, steering, and damping.

Italian roads are deteriorating as the country’s wallet is emptying, and I had to make frequent use of the variable ratio power steering in the cause of pothole avoidance to safeguard those gorgeous five-spoke 19-inch alloys. It is fair to say the RS3’s secondary ride is on the firm side and that I would definitely tick the magnetic ride box for a car to be used on the similarly pockmarked U.K. roads.

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TECH SPEC '15 AUDI RS3 SPORTBACK

BASE PRICE
\$50,000 (est.)

LAYOUT
Front-engine, AWD, five-seat, four-door hatchback

ENGINE
2.5L, 367hp/343-lb-ft, turbo DOHC 20-valve I-five

TRANSMISSION
Seven-speed dual-clutch

CURB WEIGHT
3,351 lbs. (mfr.)

WHEELBASE
103.6 in.

LENGTH X WIDTH X HEIGHT
168.2 x 77.4 x 55.6 in.

SUSPENSION
MacPherson strut (f); multi-link (r)

BRAKES
Eight-piston calipers, 14.6-inch rotors (f); 1-piston calipers, 12.2-inch rotors (r)

WHEELS & TIRES
19x8.5 in. (f/r); Pirelli P Zero 255/30 (f), 235/35 (r)

0-60 MPH
4.3 sec. (mfr.)

Pick up speed, however, and the ride improves noticeably as the suspension starts to breathe. The faster you go, the more impressed you become with the iron-fisted body control, and at sane speeds on twisty roads, the RS3 just goes where you point it. The quattro system allows you to open the taps fully once past the apex of a bend.

That five-cylinder motor is a peach. Crisp throttle response and a warbling soundtrack to die for endorse its Engine of The Year credentials. The natural descendant of the legendary Ur-quattro motor in this respect, it totally shades the effective but anodyne four-cylinder motor in the A4S AMG for raw character, sheer thrust, and that spine-tingling soundtrack.

Some miles on the Autoroute flagged up the counterpoint to the more engaging side of the RS3. At a steady state 140-km/h (90-mph) light throttle cruise, engine noise recedes nicely into the background, and the RS3 behaves like a standard A3 with fuss-free cruising and stock steady aerodynamic stability.

Should you need to accelerate, light pressure from your right foot results in immediate thrust in the higher gears, while maximum go is just a finger pull or two on the left paddle away. You could happily cover hundreds of miles in a day like this with minimal stress.

Audi thoughtfully provided the Vallenga Circuit for us to explore the outer limits of its new king hatchback, and this was eagerly anticipated. Note to self: Disengage all the safety systems on track, as these can be intrusive on a car that is basically nose heavy and supposedly able to shunt all its power to the rear.

Slightly nose-heavy cars of any drive persuasion are usually unerringly stable through fast sweepers but can be hobbled by understeer if you carry too much speed on the way into a slower turn. And so it

proved to be. Clever differential or not, you cannot change the laws of physics, and the RS3 responds best to the slow in fast-out school of driving.

Drive it by the book and its supreme traction, boisterous engine, and rapid-fire gearshifts really come into their own. However, the ability of the chassis to engage on the level of a good rear-wheel-drive car is still a missing ingredient.


That said, the racetrack is not necessarily the RS3's natural environment. It is on fast country roads in all weather conditions, in town where it's compact size and good low end torque are a bonus, and on highways where its refined cruising really come into its own. These are the hallmarks of a fine high-performance road car, and the Audi RS3 is a fine high-performance road car.

On sale in Europe from June, the new Audi RS3 is a mature and very well-resolved package that you could characterize as the ultimate expression of the hot hatch. It is a car that someone who has outgrown the Volkswagen GTI would likely be attracted to when the time comes to move upmarket in power and sophistication, but not physical size.

QUATTRO GMBH

Audi sold more than 15,000 R8 and RS models in 2014, the bulk of these in Europe, and the sporty sub-brand is rapidly gaining ground in other markets. The RS4 and RS6 are very popular in Europe, but their Avant-only body style this time around excluded them from the U.S. and China.

"In the past, we brought the RS version to market toward the end of a model life cycle, as the production quantities were always going to be relatively small," Heinz Hollerweger, the marketing director of Quattro GmbH explained. "For instance, the previous RS3 was only launched 18 months before that A3 generation was superseded."

"With the establishment of quattro GmbH and a growing demand for the RS models, these high-performance variants are now programmed into the development of a new model from day one, so we are able to introduce them much earlier in the life cycle," he said. "The current RS6 was the first model to benefit from this new strategy, and now we have the RS3, with both on sale around a year after the launch of the basic car." 

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'15 Volkswagen Golf SportWagen

SAME GREAT TASTE, MORE FILLING

Words Michael Febbo

Let's start with the easy part. The '15 Volkswagen Golf SportWagen is a Golf with a longer cargo area. Plain and simple, there it is. The EPA rates the SportWagen at 30.4 cubic feet, compared to the hatchback Golf's 22.8 cubes. For the record, that's more space than VW's Tiguan SUV. The rear seat legroom remains the same as the hatchback's while headroom gets a slight increase, on paper at least.



The exciting news for the forum fanboys will be that the SportWagen is available with a diesel engine and the holiest of all things, a manual transmission. New for this generation is the availability of the diesel engine in the base model, which means you can now get the frugal and efficient wagon starting at just \$25,415, including delivery. But even the base model gets you keyless access with push-button start, rear-view camera, touch-screen infotainment system, and Bluetooth, just to name a few of the features. Add another \$1,100 on top of that price and you can add VW's DSG transmission.

If you can live with a still impressive 36 highway MPG compared to the TDI's 43 highway MPG, you can get into the 1.8t-powered Golf SportWagen S for a mere \$22,215 with a five-speed manual. The transmission option on the 1.8t is a traditional six-speed torque converter automatic.

The diesel is rated at 150 hp and 236 lb-ft of torque, while the 1.8t is 170 hp and 199 lb-ft of torque. If recent dyno numbers are to be believed, the 1.8 is probably making those numbers at the wheels, but I digress. The 1.8t with the manual is the obvious choice for driving fun. It doesn't have the big lump of torque down low like the TDI, but it has enough to scoot around town without ever having to hit 3,000 rpm. It does move when you wind it up over 4,000 rpm, even if the little turbo runs out of breath just short of redline.



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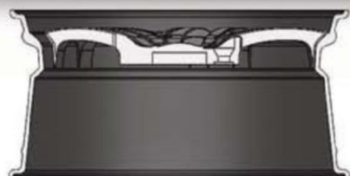


Handling is again a clone of the hatchbacks, but with a bit of a twist. If you really push the car, and I mean really push it, you will notice the greater moment of inertia from the longer backend on turn-in. The upside, however, is that the extra weight in back makes the car a bit more neutral mid-corner. But I have to imagine that I will be sorely disappointed with the percentage of SportWagen owners that will hit track days or even canyons. Around town, it is a dream to drive when compared to an SUV. Visibility is great out the back and it maneuvers through parking lots like any other car.

For those of you with a previous-generation SportWagen, this MQB-based upgrade is library quiet. Wind noise is virtually non-existent, even from the roof rails, and the tire noise is better attenuated than in previous models. A sticking point for some might be the torsion-beam rear axle on the SportWagen whereas the 1.8t Hatchback Golf is equipped with multi-link. For me, it's a non-issue. I'm as big of a suspension geek as you will likely find, and I didn't even realize it was torsion beam until someone pointed it out to me in the spec chart. If you can tell the difference between the two without driving them back-to-back on a racetrack and you aren't working as a suspension engineer, you're wasting your talents.

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TECH SPEC

'15 VOLKSWAGEN GOLF SPORTWAGEN

BASE PRICE

\$22,215

LAYOUT

Front-engine, FWD, five-seat, door-door station wagon

ENGINE

1.8L, 170hp/199-lb-ft, turbo DOHC 16-valve I-4/2.0L 150hp/236-lb-ft turbo DOHC 16-valve diesel

TRANSMISSION

Five- and six-speed manual/six-speed auto/six-speed dual-clutch

CURB WEIGHT

3,100 lb. min. (mfr.)

WHEELBASE

103.5 in.

LENGTH X WIDTH X HEIGHT

179.6 x 70.8 x 58.3 in

SUSPENSION

MacPherson strut (f); multi-link (r)

BRAKES

X-pistons calipers, XX.X in rotors (f); X-pistons calipers, XX.X in rotors (r) Modifications start at master cylinder; lines, calipers, rotors

WHEELS & TIRES

Make Model wheels XXxX (f), XXXX (r); Make and Model 235/35 (f), 325/30 (r)

0-60 MPH

8.0-9.2 sec. (est.)

EPA CITY/HWY/COMB.

MPG 25-31/35-43/29-35 mpg




H&R GOLF SPORTWAGEN SEMA PROJECT

German suspension specialist H&R always has some of the cleanest and most real-world lust-worthy vehicles at the annual SEMA show, and 2015 was no exception. The SportWagen you see here is equipped with Street Performance Tuner Coilovers and a 25mm rear sway bar. The wheels are from Rotiform and brakes from Brembo. This car demonstrates the performance potential in what most will consider the most mundane model of the Golf.



Some might be asking what's the point of the SportWagen when you already have a Golf that is just slightly different in size. A SportWagen with the seats folded down will allow a road bike to lie flat without the wheels. Personally, I have a folding stroller that has to sit across the entire trunk floor of my GTI; it slides in lengthwise in the SportWagen, leaving the other half of the floor space empty. My roll-aboard carry-on bag has to sit sideways in my GTI, while the SportWagen allows for two lengthwise. The size difference doesn't seem huge on paper, but in practice, it will make a huge difference during Costco runs or family vacations.

If you load up a TDI SEL SportWagen with DSG, adaptive Bi-xenon lighting package, and Driver's Assistance Package, you can hit \$33,995. As much as I would like to compare that to every competitor on the market, there really aren't any. The closest thing might be a Toyota Prius v Five, which comparably equipped is \$36,870. So not only is it more expensive, gets worse fuel economy than the TDI on the highway, but it's a Prius. So anyone who enjoys driving will likely have more fun on a city bus.

If you are seriously considering a SportWagen, I feel it's my responsibility to point out that the '16 model year will get an all-new infotainment system with a bigger screen and faster processor. There is also the rumored crossover version on the horizon, and we here at *ec* hope the GTD or even R-line with a 2.0t and AWD will become more than just fantasies for the U.S. Even without these, the MQB-based Golf SportWagen is a solid choice for hauling anything from families to gear. 

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➔ '16 PORSCHE GT3 RS

WORDS MICHAEL FEBBO

RACING TO THE TOP



I arrived at Gräflicher Park Hotel in Bad Driburg, Germany, nearly a week into an extended trip that even I strain to call work. The woman at check-in tried not to notice I still smelled like race car exhaust and burnt tire; a few hours earlier, I was standing alongside the legendary Flugplatz section of the Nordschleife during the 24 Hours of Nürburgring watching the perfect precursor to this event. I'm about to drive Porsche's new GT3 RS, a car forged and honed in events like the legendary endurance race.

I wake up the following morning at 3 a.m.; I really don't need to be up this early, but back home in California, I would be cooking dinner right now. I'm also buzzing to have my first hands-on experience with what has the potential to be one of the best cars ever built. Until now, I have only seen the GT3 RS in photos, which rarely does a car of this ilk justice. After my typical German breakfast of cold cuts, strong coffee, and smooth-techno beats, I stumble outside to a selection of RSs sitting on the curb.

The most obvious feature of the new 991-based GT3 RS is the batwing-like air extractors carved into the widened front fenders. They are important in two ways: First and foremost, they allow the high-pressure air in the front wheelwells to be expelled out the top and rear of the front fenders, contributing 30 percent more downforce on the front axle. The second and nearly as important function of the vents is to give visual evidence of the spirit and mission of the street-legal track weapon.

The RS version of the GT3 is as polarizing as those big gills disrupting its flowing lines. I hear from enthusiasts that this car is all wrong. It should be the purist of the Porsches and as such should be equipped with a manual transmission, manual steering, and without any electronic aids like a torque-vectoring e-diff or rear-wheel steering. Sorry, guys, but you're wrong. This isn't that kind of car. Porsche just recently launched the

back-to-basics Cayman GT4 to fill that niche. The GT3 and, more importantly the RS, is meant to be the closest thing you can get to a GT race car for the street. The pinnacle of performance achieved through technology and engineering. The GT3 RS sits atop a 911 pyramid whose base rests above 90 percent of the rest of the world's cars. If you think the base Carrera is great, you will struggle to find words worthy of the RS.

The changes to the RS can appear small on paper, but it's how they all gel together into a package that counts. To start, the body shares dimensions with the 911 Turbo. The rear is roughly an inch wider than a GT3 while the front is just over an inch and three-quarters wider, which is 28 mm and 45 mm for those metric-minded readers. The rear fenders also use the air inlets from the turbo, which instead of feeding intercoolers are now used for ram-air ducting to the engine's airbox.

At the front of the car, a larger splitter forces air over the car instead of under, while the taller rear wing is more efficient in the cleaner air. All the aero work on top of the car, along with a nearly flat-bottom produces 760 pounds of downforce at speed, which Porsche claims is 80 percent of what a Cup Car is capable of. Speaking of the body, even with the wider, more complex and aggressive panels, material selection has allowed the reduction of 22 pounds from the body alone. Starting at the top, the "double-bubble" roof is made from magnesium. The rigidity of the material allows for a significant savings over the more fashionable carbon fiber. The front fenders along with the front and rear decklids are molded from carbon-fiber-reinforced plastic while the doors are aluminum. The rear bumper is made from the traditional polyurethane but micro-balloons, small glass spheres are mixed in to decrease weight even further without losing strength. Porsche has reduced the amount of noise insulation used in the body to save yet a few more pounds.







TECH SPEC '16 PORSCHE 911 GT3 RS

BASE PRICE

\$176,895

LAYOUT

Rear-engine, RWD, two-seat, two-door coupe

ENGINE

4.0L, 500hp/338-lb-ft, DOHC 24-valve flat-six

TRANSMISSION

Seven-speed dual-clutch

CURB WEIGHT

3,150 lb. (mfr.)

WHEELBASE

96.7 in.

LENGTH X WIDTH X HEIGHT

178.9 x 74.0 x 50.8 in.

SUSPENSION

MacPherson strut (f); multi-link (r)

BRAKES

Six-piston calipers, 15.0-inch rotors (f);
four-piston calipers, 15.0-inch rotors (r)

WHEELS & TIRES

20x9.5 (f), 21x12.5 (r); Michelin Pilot Sport Cup
2 235/35 (f), 325/30 (r)

0-60 MPH

3.1 sec. (mfr.)





"I attribute some of the dynamic greatness to suspension travel and compliance. Not only does the RS sit higher than the standard GT3, but it has higher profile tires."



Inside, carbon-fiber seats from the 918 are supportive and again lightweight. In other markets, a Clubsport package is available with even lighter seats, a factory fitted rollbar, wiring for an electrical kill-switch, and a fire extinguisher. Lightweight options that are available in the U.S. include a \$2,300 lithium-ion battery, and the radio and air conditioning can be deleted at no cost.

The interior also uses the mandatory pull-strap door release, whose operation might be my biggest complaint with the car. It is a small complaint, but you pull the strap away from you to open the door; obviously, the natural movement is to pull something toward you. Like I said, a small complaint. The RS also gets a smaller 360mm diameter steering wheel and the shifter pedals are said to have even shorter throw than the regular GT3.

The suspension setup is very similar to the GT3. The biggest difference between them is the damper settings have increased slightly and Porsche is using monoball mounts on the front struts and rear shocks. The antiroll bars, ride height, and camber are all adjustable while damping rates are adaptive with PASM. The RS also uses active rear-wheel steering and an electronically locking differential to maximize grip.

The tire and wheel package is the largest ever on a 911. The fronts use a 265/35-20, while the rear uses a 325/30-21, which happens to be the same size as the rear of the 918. Although it may be the same size, it is a drastically different tire from the hybrid supercar. The construction of both tires contains pre-tensioned aramid bands that allow the control of the shape of the contact patch under load. Because of less mass, less torque, and different loading, the GT3 RS is easier on tires. The Michelin engineer on hand praised the rear wheel steering, camber curve tuning, and Porsche's ability to optimize suspension performance for decreased tire wear. Michelin was able to remove the stiffer shoulder compound normally found on the front tire as well, as the RS is able to optimize the use of the entire contact patch even during track driving. After a day of track abuse, the Michelins were worn, but wear was even and there was no chunking or blistering normally associated with hard track work.

Like the chassis, the drivetrain is an optimized revision of the GT3 unit and not a new design. Porsche has increased stroke of the almost comically over-square engine by 4 mm, bringing displacement from 3.8 to 4.0 liters. The RS engine redlines at 8,800 rpm, as opposed to the GT3's 9,000-rpm limit. You won't miss the extra 200 rpm, as you shift well before then anyway.

Like the GT3, the RS uses titanium connecting rods, but now has a racing

derived V361 steel crankshaft. The high-purity alloy is melted and re-melted multiple times in a vacuum and tempered to optimize strength. It is the same technology used in the 919 Hybrid race car and F1 engines. The intake and exhaust systems have been redesigned to optimize flow and reduce restrictions. The rear muffler section is titanium and uses valved bypass sections to control both noise levels and backpressure. All of this adds up to 125 hp/ltr for a total of 500 hp.

The most controversial component in the drivetrain is certainly the PDK transmission. Personally, I can't imagine selling this car with anything but the most advanced transmission available. 911s would certainly be more "involving" if they were still on 16-inch wheels with 205mm-wide tires, but it doesn't mean they would be as good. The twin-clutch semi-automatic transmission fits the car's mission and personality. This iteration shifts gears in just 95 milliseconds. For perspective, the lightning-fast PDK in a Carrera S takes 120 milliseconds. Not only that, but shifts are smooth and more noticeable audibly than through the seat your pants. There is a sport button that makes the shifts more aggressive, but even the engineers and pro drivers at the event said they prefer the car in standard shift mode.

We started our day driving to the track on a mixture of Autobahn, city streets, and twisty back roads. My initial impression of the interior is—this is a 911 with better seats and a smaller steering wheel. There isn't any sign of compromise or inconvenience. It's comfortable and luxurious. I might even say perfectly normal. Even visibility is as good as a normal 911. Lifting that giant rear wing up into clean air has also moved it up and out of the driver's sight line out the back.

The RS is louder than a standard GT3, but I never noticed it being "too loud," and this is from a guy who has recently come to the realization that I am too old for some aftermarket exhausts. At wide-open throttle, the intake howls through the fender intakes and the exhaust rips away behind you but isn't shaking your eardrums like its Italian competitors. At cruising speeds, the engine purrs away and has a raspy quality that reminds me of an air-cooled car with equal-length headers and an unbaffled muffler.

The suspension in normal mode is equally as amiable to sane driving. Most German roads are glass smooth, but I found some areas of broken and potholed pavement that in previous RS cars may have rattled a filling or two loose. This RS, however, is nearly as compliant as a Carrera S. Maybe the big Michelin sidewalls are doing double duty here, but I could easily live with this car on the daily commute.



WEEKDAY WARRIOR

The GT3 RS you see below is one of the first Porsche press cars anyone outside the company was allowed to touch. If we're keeping score, I was one of the first five Americans to drive the GT3 RS, but who's counting. On the left is a standard GT3, a privately owned car that happens to be the daily driver of Porsche Works Driver, Le Mans, Sebring, Daytona, Spa, and various other race champion Jörg Bergmeister. I asked for a photo to compare the two cars, and Jörg's car was the only one available at the track.

His RS is on order and will look remarkably similar to the one you see here. Why silver? "Well, I've had a lot of good luck racing in silver cars. It always seems to be fast for me. Also, I live in a small village and I want something not so bright and more understated." So the big rear wing and big fender vents are understated in the right color? "This is what I tell myself."

The RS is \$45,500 dearer than a run-of-the-mill GT3. What you get for the money and value proposition is something you have to decide for yourself. In my opinion, this is the 911 to buy if you can play in this market. It falls in between the Turbo and Turbo S in terms of price but is immeasurably more enjoyable than either. Both if you want. In Jörg's opinion, "It isn't just faster, it's better. That's why you build something like this."



AT HOME ON THE TRACK

Bilster Berg Drive Resort is one of the toughest tracks I've ever driven and not the first place I'd choose to drive a fast car for the first time. Blind corners, big elevation changes, and a few hidden tricks make this challenging in any car. In a fast, edgy, rear-engine, expensive car, it's a recipe that will make an insurance agent cry.

Porsche kept the instruction brief and the warnings stern before hitting the track. First impressions involve the car shrinking as you go faster and becoming even more responsive. On the road, the RS feels big, mostly because it is. The steering feels a little slow on tight, twisting roads but makes more sense on track. Suddenly, turn-in isn't slow, it's smooth, accurate, and measured. I'm not jerking the car into the turn, but flowing. The way it unwinds, an often-overlooked characteristic, is fantastic. I don't drive to the exit of the turn; the car naturally ends up there. The brakes are perfectly responsive and the pedal resistance builds fast, meaning brake modulation comes from pressure and not just travel. The car is still big compared to past 911s, but it's so easy to place because you never feel like you have to give yourself a big margin of error.

"Porsche kept the instructions brief and warnings stern before hitting the track."

There are only a few spots on the track that are fast enough to feel any downforce, but the RS has so much mechanical grip, it feels like that wing works at 15 mph. It seems like I've been driving a lot of 500hp cars recently. Some put down power better than others, but none of them match the RS. The car is dead-neutral the first half of the turn, which normally results in big exit oversteer in powerful cars. It turns in and rotates like a mid-engine car. Too much brake will get understeer; a clumsy yank will get understeer. Trail-braking and a quick twist of the wheel will allow you to move the back around. The computer will even allow a pretty decent amount of slip, if it thinks you meant to do it. Jumping on the throttle mid-corner will hang the rear end out, again, even with the electronic safety net—as long as you don't scare it.

Perhaps the biggest difference between this RS and previous generations is the amount of confidence it inspires. You aren't concerned with getting near the limits. That isn't to say this car isn't challenging. After a day at the track, I felt like I was driving it respectfully, but nowhere near its maximum potential. The RS will take you countless laps to master, but it isn't like a Viper that fights you. It also isn't like a GTR that says, "Oh, you screwed up. Here, let me just fix that for you." It feels like race car but doesn't punish you for not being a race car driver.

There are countless people who fantasize about driving a race car on the street. There are as many tuners who will take your perfectly good car and give you all the compromises of the race car with a sliver of the performance. Porsche has delivered the exact opposite with the GT3 RS. The RS sits higher and has more tire sidewall than a standard GT3, the exact opposite of the tuner playbook. It gives you all the best sensations of the race car experience with none of the compromises. It is hard to call this the best 911 ever. I don't think you can realistically compare this to a car from 40 or more years ago. I can, however, sleep easy saying this is the best 911 of this century. **EC**



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'15 MCLAREN MSO 650S SPIDER

WORDS & PHOTOS NICK HALL

It's a surreal moment of realization. I'm cruising down the highway as what feels like the 100th camera phone points in my direction and yet another kid's face presses against the glass with a look of shock and awe. When you buy this car, this \$400,000 hunk of metal and carbon fiber, an MSO McLaren, it isn't really yours. This car is public property.

It might be a hard sell presenting one of the most selfish purchases money can buy as an act of charity, but there really is a solid core of truth in there. I get three days with one of the most exclusive McLarens on the road, which is a rare insight into the world of the 1%, and it isn't as great as you'd think. Not only do I get chased down the road, I get 100 offers to swap cars—and I even think it's about to get ugly when four guys follow me into a car park late at night. As it turns out, the 6-foot-tall Russian mafia members are cool, they're car guys, but it's an eye opener. I'm at a loss where to park it when I go to the shops, and in the end I settle on a multi-story car park, basically entrusting the car to the security team that trains every camera in the joint on its golden haunches. I don't think I could park it up by the side of the road and just walk away.

I didn't even think about such trivial things as I sat there in Ron Dennis' sprawling empire, the McLaren Technology Centre, like a kid at Christmas, waiting for the key and the green light to go. But these are real issues, intrusions on the dream. They all disappeared as I flatten the throttle on a deserted stretch of road.

The MSO stands for McLaren Special Ops, which is the bespoke division of the British supercar manufacturer. In this case, it means more than \$120,000 of options to take the final price of the car above and beyond \$400,000.







Here, that buys bespoke Saigan Quartz paint, a carbon rear diffuser, side skirts, side sills, mirror casings, custom side air intakes, a cover for the windscreen wiper, lightweight diamond-cut wheels, and a sports exhaust system. There are other touches, too, but when you think about how much each of these small accents add to the final bill, it could send you insane. And this is just the start.

McLaren will do what you want, if you've got the money. Ask the guy who owns the X-1, a bizarre 1950s vision of tomorrow's sports car built around the chassis of the MP4-12C. That's too much for most palates, but it's still kind of cool that a company like McLaren will invest that much time and effort in one man's vision. How much they charged for that level of personal attention remains a closely guarded secret.

Most clients don't go that far, and the MSO touches can be as subtle as a few extra flashes of carbon fiber in the cockpit. But for the people who worry their McLaren might not stand out from the crowd, which really isn't an issue for normal people, it's comforting to know that their car can be infinitely tailored to suit.

Now, of course, the MSO is no faster than the standard 650S Spider, it doesn't stop any quicker, and it isn't any better through the bends. But does it seriously have to be?

The 650S Spider is so far beyond the public road that additional performance could only put you in jail. It would have been easy, a 3.8L twin turbo is easy to tweak, but it has 641 bhp. That's enough. The 650S Spider is stupid fast. With the aid of launch control, it will hit 62 mph in 3.0s, yes really, 3 seconds, and it will do

TECH SPEC

'15 MCLAREN 650S SPIDER

BASE PRICE

\$283,925

PRICE AS TESTED

\$400,000 (est.)

LAYOUT

Mid-engine, RWD, two-seat, two-door convertible

ENGINE

3.8L, 641hp/500-lb-ft, twin-turbo DOHC 32-valve V-8

TRANSMISSION

Seven-speed dual-clutch auto

CURB WEIGHT

3,020 lb. (mfr.)

WHEELBASE

105.1 in.

LENGTH X WIDTH X HEIGHT

177.6 x 74.6 x 47.2 in.

SUSPENSION

Dual control arm (f/r) hydraulically linked active, rear z-bar

BRAKES

Six-piston calipers, 15.5-inch rotors (f); four-piston calipers, 15.0-inch rotors (r)

WHEELS & TIRES

19x8.5 (f), 20x11 (r); Pirelli PZero Corsa 235/35 (f), 305/30 (r)

0-60 MPH

3.0 sec.*

QUARTER-MILE

10.7 sec. @ 134 mph*

BRAKING 60-0 MPH

105 ft.*

LATERAL ACCELERATION

1.05 g*

EC FIGURE-8

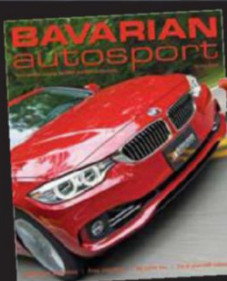
23.1 sec. @ 0.99 g (avg.)*

*Performance figures taken from previous testing

125 mph in 8.6s, which is fast enough to leave other car's license plates spinning cartoon-style on the road. It won't run out of steam in Seventh gear until you're through the 207-mph mark, too, which should be scary. The most disconcerting part is that it isn't. At all.



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Even with a traditional British weather that makes the folding hardtop an amusing irrelevance, I goad the car with ever more violent bursts of acceleration. I bury the throttle, blow my own mind with the speed of it all, recalibrate my brain, and go again. Only once does the car step out, I scare myself witless for a fraction of a second, and then it's go time again.

A carbon-fiber tub that helps keep the curb weight down to 3,020 pounds joins forces with trick, interlinked hydraulic suspension; a wide footprint; and perfectly weighted steering to make a car that simply feels beyond a mere mortal's exploitation. My twisting test route down the Devon coastline, which also makes



for a stunning photo location on brighter days than this, is as challenging a road as you'll find—and the 650S simply devours it. Before long, I'm traveling at speeds that are, frankly, disrespectful considering the tight lanes and the long drop to one side.

McLaren made its name producing championship-winning cars since 1963 and taking the likes of Ayrton Senna, Alain Prost, Mika Häkkinen, and Lewis Hamilton to title glory. It also produced perhaps the greatest supercar of all time, the legendary McLaren F1, seemingly for a fun pet project. We'll politely look past the McLaren-Mercedes SLR and say that McLaren has only recently turned its focus on the road car world. The MP4-12C was its first attempt and this, the 650S, is its effective replacement. In truth, the MP4-12C was more of a development mule for the real car; this is the one it should have built from the outset. And it's good. Not just fast and agile, it's really good.



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
Of course, the stitching on the Alcantara dashboard is perfect. That's to be expected from the notoriously detail-oriented Ron Dennis. But the proprietary sat nav and in-car entertainment, one of the original car's weak points, was a radical move that has, eventually, paid off. It's the separate climate control for the driver and passenger and a level of refinement that mean I step out in Plymouth, five hours after leaving the factory thanks to traffic, as fresh as the moment I left, that make the 650S Spider truly

remarkable. But then, it has to be.

The McLaren goes toe to toe with the company's on-track rival, and the 458 Italia is a hell of a car. Car magazines have attempted to separate them, and the 650S seems to edge it, but it is by fractions, and those fractions are irrelevant Top Trumps arguments that are had in the bar, not on the road. The truth is that the choice to buy a McLaren or Ferrari is an emotional one and it has almost nothing to do with the technical parts of the car. It's about what they represent.

Ferrari polarizes opinion like no other brand. There are those who love the history, the nostalgia, the pomp, and the ceremony. They even love the fact that every Tom, Dick, or Harry is opening a 10-year-old Fiat Uno in Rome with a key attached to a Ferrari-branded key ring. Others have come to hate the Italian marque for exactly the same reasons, and there is a bizarre inverse snobbishness that has grown up around Ferrari. For some it's the obvious choice, the brash idiot's supercar.

For these people, the McLaren is the perfect foil for the outrageous, flamboyant Italian. It's the Hugo Boss suit compared to the lurid Valentino. Cool, clinical, engineering led, it's the polar opposite of the Ferrari ethos, which is enough to clear McLaren's shelves of stock for years to come.

Of course, the reality is somewhat different. The reality is a world of camera phones, stalkers, offers to swap cars, and sweaty-palmed fear when you leave it parked. When you buy a car like this, it's for other people, as much as yourself. And even though I want to be with every fiber of my soul, I'm just not sure I can handle that level of attention. 





PD458

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Promoting from Within

MILLTEK RESTORES A MK1 GTI TO SHOW OFF ITS NEW CLASSIC LINE

WORDS MICHAEL FEBBO

The market is quickly changing for the MK1 and MK2 Volkswagen Golf platforms. For years, these were considered the affordable way for younger enthusiasts to get into the Golf and GTI fraternity. As the cars age and parts become increasingly more rare, keeping one on the road becomes more of a real commitment rather than just a hobby. When Milltek Exhaust decided to develop a new Classic Line for these beloved platforms, Managing Director Steve Pound saw it as an opportunity to build the MK1 GTI he had always wanted.

We often hear about the long, painstaking journey to find just the right car with which to begin a project. Hours of scouring the Internet, traveling miles to see a potential car only to be disappointed. Steve's story is nothing like that. "I think this one was meant to be, really," Steve says with a laugh. "It was advertised on Club GTI, and by Tim Moll, who's a proper chap, a serial MK1 owner, and a racer to boot! He's a real enthusiast, so I knew it was worth a trip over." The trip Steve is referring to was a mere five miles in length. At the end of the road was the '83 Campaign Edition GTI you see here. It was a bit rough, but it was complete and more importantly, real.

Many of the Campaign Edition cars you'll find on the used market are standard cars that are misrepresented as the real deal. The limited production cars were built with option code S707 and were built with a selection of parts not found on any other model, in this combination. Most notable on the outside were the Pirelli P-slot wheels that, while similar, are slightly different from the later P-slots found on the MK2. The MK1 wheels have larger Ps while the word "Pirelli" is also stamped into the center cap.





Besides that, real Campaign Cars were delivered with a sliding sunroof and green tinted glass. On the front, the dual round headlight grille featured foglights in the inner positions rather than the traditional driving lights. The gas cap was apparently different as well, but rumor has it, several of the Campaign cars “lost” theirs before delivery.

Inside the car, there was the traditional four-button GTI wheel, but in this instance, leather wrapped. The traditional golf ball shift knob sat between the cloth seats and much attention was given to the golf tee-shaped lock pins, until it was discovered they were in fact the same units as a base Golf.

Mechanically, these cars are nearly identical to other GTIs from 1983. Under the hood was the 1.8L K-jetronic fuel-injected four-cylinder that had recently undergone a bump in displacement from 1.6 liters with an increase in bore and a longer stroke crankshaft. All the 1.8L GTIs were rated at 112 bhp and 109 lb-ft of torque at 3,500 rpm. Performance was impressive by standards at the time, sprinting from 0-60 mph in just 8.3 seconds and topping out at 114 mph.

That’s all fine and good, but the car Steve found has a surprise under the hood. Old-school VW fans will recognize the significance of the name GTI Engineering and will appreciate why

the RE1900 engine in this car is actually more sought after than stock. For those of you who don’t recognize the name, GTI Engineering was founded in 1978 and quickly became the go-to source for building both street and race Golfs in the U.K. After years of success in the British Saloon Car Championship, critical and public acclaim, the company was recognized as an Official Audi/VW Conversion Specialist. Records indicate that the engine in this car was originally built for a MK2, but sadly, that car has been lost to time. The car was brought to longtime Milltek partner, KPM Racing. Right away, Steve knew that this was going to be more restoration than project build. Not only did he have his own vision in mind, but after looking around he thought it would be most representative of what his customers were doing. Not only would this define the way he built this car, but also Milltek’s new Classic line of exhaust systems. “The classic market has really grown up in the last few years,” Steve says seriously. “These cars are now being put back to standard or OEM+ appearance, and our research tells us that people want refinement, quality, and fit for these cars now, coupled with performance gains and a civilized tone. For that reason, we completely re-tooled and redesigned each system for the Classic range in order to achieve those outcomes.”

“The classic market has really grown up in the last few years. These cars are now being put back to standard or OEM+ appearance, and our research tells us that people want refinement, quality, and fit for these cars now, coupled with performance gains and a civilized tone.”





KPM went right to work on straightening out the body. Years of hard use had taken their toll on the car and the crisp Giugiaro-penned lines weren't looking as ruler-straight as they once did. As with any car this age, rust spots had to be attended to before applying the base coat of the factory Diamond Silver. Three coats of clear were lovingly applied and polished, giving the paint a depth that no MK1 ever left the factory with.

The drivetrain was found to be in great shape. A basic service was done before Milltek went to work designing the exhaust system. At the time of the photo shoot, the car wore twin muffler, single-outlet cat-back in full stainless. Steve says it provides a "sporty tone without being ostentatious or sounding overtly modified."

He considers this to be an aftermarket for grown-ups, which let's be honest, is who can afford to restore one of these cars. "It's interesting to see the improvements we can make with these older cars. We are applying the latest optimization processes, material use, and design philosophy to these systems, using technology that just wasn't available for period systems—and the results really are fantastic to live with." By the time this is published, Milltek may also be offering both an exhaust manifold and downpipe for most applications.

For the chassis, Steve went with more trusted names and stayed with period-correct choices. You won't find two-way adjustable coilovers here. Thankfully, he never considered airbags. Instead, he went with the proven combination of Bilstein dampers with Eibach springs. To help the car maintain geometry, Powerflex bushings were used in place of the factory rubber pieces.

The interior of the car didn't need much more than a good cleaning. The driver-side seat needs the side bolsters repaired, but other than that, everything was in place and functional. Even the MFA, Multi-Function Actuator, system in the instrument cluster worked.

Steve says he absolutely loves this car. "It's the car I wanted when it came out, even down to the color, and it looks superb in our fleet alongside the UR Quattro that we have and my five-door MK2. It's not concourse, but that's not what I wanted. This car was built to use and enjoy, and I didn't want to be cocooning it in a workshop, when I should be out thrashing it. Isn't that what a GTI is really for?"

I set out to create an original-looking car, with period tasteful mods. With KPM's help, and thanks to Tim selling me a great car in the first place, I think we have achieved that." 🍷

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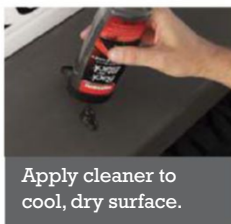


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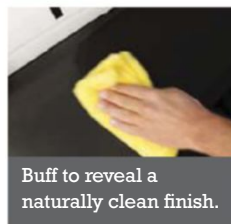
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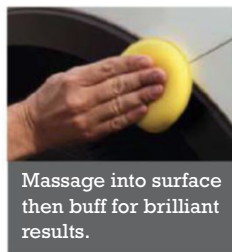


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TRACK 101

PREPARING YOU AND YOUR CAR FOR THE FIRST TIME ON THE TRACK

WORDS AND PHOTOS DOUG NEILSON

You've heard of it, you've seen it, you want to do it, all your friends are doing it, and it has been popular for years now, so what are you waiting for? Now is the time for you to jump into the driver seat. Yep, I'm talking about the race-track: high-performance driver education (HPDE), car club track events, and open track days. But before you jump into the driver seat, you need to first step completely out of your comfort zone. Now, I know you're feeling intimidated, and perhaps even a little bit scared, as the thought of driving your "baby" at speed on a racetrack may cause you to quake in your boots.

OK, no need to fret—I'm here to help. First, let's get *you* sorted out. The most important thing to remember is that everyone at the track, no matter how much experience they have now, had to start somewhere. That is, they had a first track day, too. So one of the first things you will learn at the track is that mostly everyone is accepting and extremely helpful to first-timers.

In my humble opinion, the best way to begin your track day journey is at an HPDE event. This will ensure that you start with some basic classroom

instruction before going on to the race-track itself. Instructors will teach you about track entry and exit procedures, track etiquette, passing rules, basic cornering theory, and the fundamental "race" or "school" driving line for the track that you are at. Believe me, all of this information will go a long way to giving you some knowledge and confidence.

Of course, you're going to need a helmet. If it is your first track event and you're not sure what your "track" future may hold, it may be best to borrow one from a friend, or rent a helmet at the track. However, if you are absolutely sure that you are going to be hooked (like the rest of us!), I suggest buying a helmet. Be sure to check out the helmet buyer's guide in the February 2015 issue of *European Car* magazine or on our website. For most HPDE, car club, and open track events, the minimum required compliance of a Snell or SA2005 or newer rating is necessary. Note that motorcycle or "M" rated helmets, e.g. M2005, are not typically allowed. For clothing, most events require long pants, as no shorts are allowed (due to the potential fire hazard). In addition, there are some events that



CAR PREP CHECKLIST

- › Engine oil level
- › Engine coolant level
- › Transmission oil level
- › Inspect engine and transmission for leaks
- › Inspect fan belt condition
- › Inspect condition of driveshaft joints and seals
- › Inspect exhaust system for leaks
- › Brake fluid level (this should be full after your fluid flush and system bleed)
- › Inspect brake pad thickness, minimum 50% wear
- › Inspect brake disc condition
- › Inspect brake hoses, pipes, and hydraulic units
- › Check steering system for play
- › Check shocks for leaks and condition
- › Check security and condition of front and rear suspension
- › Inspect front and rear wheel bearings for play
- › Inspect tire condition and set pressures
- › Inspect wheels for damage or stress cracks
- › Check all wheel lugs for correct torque spec
- › Check seat security and safety belts
- › Check operation of all lights (if fitted)
- › Clean and dry footwell floors and pedals
- › Check battery for secure mounting
- › Remove all cabin clutter—everything from car

require long shirt sleeves as well. And for shoes, I suggest a pair of thin-soled runners to ensure you have a good pedal feel and grip. Regardless, make sure you are comfortable and be sure to check the organizer's rules prior to the event; you don't want to go home disappointed.



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You also need to prepare yourself mentally and physically for your track event. This type of sport requires your full concentration, as your senses will be overloaded from your first lap to your last lap of the day. Therefore, you will need to be extremely well rested and hydrated prior to (and during) the event. Also, my advice is to always leave your ego at the gate when entering a racetrack. You may well think you are the next Ayrton Senna, but there is a hell of a lot to learn. I have been running at the track for more than 14 years and instructing for 11 years, but I still learn things every time I go. Note at

an HPDE event you will be paired up with an instructor when you are a beginner, and as you progress, I recommend you keep asking for an instructor. Drive smoothly, within your comfort zone, and look well down the track (keep your vision up). As a student, no matter how experienced, the best advice is to be sure you are all ears. You may not be able to perfect the most recent skill learned or discussed on that particular day, but at least you heard it, and you will remember it until it becomes second nature to you. After all, learning at the track is about repetition in a safe environment; practice, practice, practice!

PREPARING YOUR CAR

Be sure your car is in excellent running condition, with all of the fluid levels topped up to maximum. Any, even the most minor, mechanical ailment or leak should be attended to well before the event. There is no doubt that running on a racetrack is harder on your car in every way imaginable, so having it in perfect running order is the best way to protect it, and the others you are sharing the track with.

Many track events require you to have your vehicle inspected by a certified mechanic prior to the event, so be sure to find out if this is the case beforehand. There are also some events that require pre-track inspections prior to the event first thing in the morning; be sure your vehicle is ready for such an inspection. Uninspected or unfit vehicles will not be allowed on the track, so be aware. Again, you don't want to be sent home disappointed. Safety first!

As a beginner, though, it is good practice to learn how to care for and monitor the condition of your tires, wheels, and brakes. You must have at least some tread on your tires—say $\frac{3}{32}$ of an inch minimum (or just above the wear bars). I do not recommend running any tire that has had any type of repair done previously (plug, patch repair, or tube installed). Be wise, just don't go there. Also, for your first few track events, it doesn't matter a lick what kind of tires you are running.

On your first track day, it is good practice to arrive with your tires inflated to the manufacturer's specifications. If you're not sure what the precise



THINGS TO BRING TO YOUR FIRST TRACK DAY

- **FOR THE CAR:** glass cleaner, paper towel, a quart of oil, rags, blue painter's tape, a tire gauge, a 12V air compressor (optional), a tarp to put all the stuff on when you empty your car, and some basic tools.
- **FOR YOU:** extra clothes, hat, suntan lotion, drinks and snacks in a cooler, and a camera.



indicates that you should replace these rotors ASAP.


It is also imperative that you have your brake fluid flushed and your hydraulic system bled prior to your track event. This accomplishes two things: Firstly, it ensures that your brake fluid is fresh and has not absorbed too much water over time. Secondly, it purges air from your hydraulic system, which ensures a firm brake pedal. Choose a high-quality DOT 4-rated fluid, but be sure to consult your manufacturer's specifications.

Finally, if your car's paintwork is dear to you, you will want to protect the forward-facing surfaces from any damage due to sand, pebbles, rocks, or other debris

that can be made airborne by speeding vehicles. There are many ways to protect the forward-facing paint:

Blue painter's tape or TrakTape (which is clear) on the front-facing areas is a simple and economic solution, but perhaps not quite as elegant.

Full-frontal clear bra, with an additional strip on the roof; a full body clear wrap is even better.

Well, that is it for this time. I wish you the best of luck at your first event, and be sure to listen carefully and have fun! In the next part of this track prep series, I will discuss some additional safety measures, along with some more advanced vehicle preparation. 

specification is, I recommend you inflate all of your tires 40 psi. This will allow you to skip the air compressor lineup and save yourself some time. You will, however, need to bleed some air out during the day; don't worry, your instructor will help you with this fundamental.

All wheel nuts, 4-lug, 5-lug, or center lock, should have their torques checked by you at the track before the event. Be sure to have the correct tools with you that are necessary to accomplish this task, and follow the precise manufacturer's specifications and procedures, which you will have memorized in advance.

Another easy thing to check is stress cracks in your wheels. These usually occur close to the center of the wheel around the wheel lugs, although they have also been known to occur in the spokes as well. Do not take any red flag warnings from your wheels or tires mildly, as these are your only links to the road. Treat them with the highest priority!

Brakes are another area of primary importance for track preparation. You must pay special attention to your pads, rotors, and brake fluid. Be sure to check all brake pads to ensure they have at least 50 percent, and preferably 75 percent or more, of pad material from new. You will be surprised how quickly brake pads wear out at racetrack speeds. For brake rotors, be sure they have not worn below the manufacturer's minimum thickness specification, and also check them for stress cracking. Drilled brake rotors are especially susceptible to stress cracks. If you see cracks that link individual drill holes, this amount of stress cracking














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RACER WITH A CAUSE

HENRIQUE CISNEROS ON HIS LOVE FOR RACING, MOMO, FERRARI, AND SAFETY

Over the Long Beach Grand Prix weekend, I had a chance to sit down next to Henrique Cisneros, owner of MOMO and driver of the MOMO NGT Ferrari 458 Italia GT3 in Pirelli World Challenge's GTA class. As it turns out, there's a lot riding on this driver's shoulders other than the race at hand.

So let's start with the team itself. This is your first year in Pirelli World Challenge, coming from the Tudor United SportsCar Series. Why the change?

We started out always in sprint racing. That's where I learned how to race and did everything. And from there, we moved to ALMS [American Le Mans Series] at the moment, and when it changed to TUDOR we went to TUDOR. We pretty much enjoyed the team aspect, and the sharing of the car, and the endurance racing—it's a whole different type of racing. And the style, and the way that you drive the car is very different. You have to make it last, you have to go easy on [the car], and hand it off to someone else. But it was never that 100 percent raw, you know, really, really push the car and give everything it's got. I think we all missed that a little bit. The single-driver sprint race is really just [driving at] 110 percent.

With Pirelli World Challenge growing so much and having so many cars running so evenly, there was a natural progression for us to get into a GT3 spec car and go back to sprint racing, which is our roots.

WORDS RYAN JURNECKA

"Racing in general has always been a passion of mine, and MOMO has been a brand that we all grew up with."

You used to run with Porsche, and still do in the GTC class in PWC. What led to your decision to run a Ferrari in addition?

Well, obviously, at that point when you're switching to a series like this, the first question is "Well, what car?" You try to analyze all the cars out there, obviously analyze the factory support and what each platform brings. Ferrari has always been extremely competitive, Porsche has always been extremely competitive—we were a longtime Porsche team. But we were really drawn to the Ferrari, especially with MOMO, and the history that MOMO has with Ferrari. We really wanted to bring that back and thought it was a great opportunity to do it. So we called Ferrari and said we were interested in the factory MOMO team being with Ferrari again. They were extremely excited and said they would love nothing else. So my brother is driving the Porsche in the GT Cup class, and I'm in the Ferrari [in GT Amateur class].

Tell me about the Ferrari itself. Are there any MOMO parts on there that are going to be related to street car performance?

Yes. Now, the only MOMO part we have currently on the car are the wheels, so we do have a MOMO wheel that resembles the "Rush" wheel for the street, and that is a wheel you can go out and buy. With these cars, they're homologated from the factory and we aren't really allowed to touch any components in the car, whether it's seat, steering wheel, or anything like that. You have to keep it identical to the way it was built. We did actually have to get the wheels homologated for the car, and so that's the only MOMO part we have on there right now. But we are working with Ferrari as a manufacturer to start introducing more and more MOMO accessories into the car.

Tell me about your own involvement with MOMO.

Well, I'm currently the owner of MOMO. Racing in general has always been a passion of mine, and MOMO has been a brand that we all grew up with. When the opportunity came up to buy MOMO, we jumped at it immediately. It was a great fit, and ever since it's been part of our racing, and so it's MOMO Racing now.

What attracted MOMO to you in particular?

Well, you know, we were looking at other companies and different brands, and I don't think there's another brand out there that's as passionate as MOMO. When you see the history [the company was founded by a racer], you see the pictures, there really is a heart of racing. And above and beyond the products and accessories themselves, it's always been about racing. I'm really passionate about racing, so it clicked. When we had the meetings with everyone there, we all got along, and it was definitely the right decision.





I've heard you're looking, as a brand, to become more involved in racing than you have been, perhaps over the last decade or so?

Yeah, absolutely. We have very aggressive plans to really grow MOMO in the U.S. and have hired a marketing agency to help us with that. Racing, of course, is a big part of that. We became the sponsor for the World Challenge for the Porsche class [GT Cup], and we're also working with Formula Drift as a technical sponsor there, and other series. So we're really trying to become more involved in motorsport and take that to our products and accessories for the streets.

You're also the chairman of a safety foundation. Can you tell us a little bit about that?

Sure, it's called the Motorsport Safety Foundation. When I was racing in American Le Mans Series, I was racing with my co-driver Sean Edwards. Sean, about a year and a half ago, had an accident during testing and he passed away. He was the passenger in the car and it was the same year that Simonsen [Allan Simonsen, driver for Aston Martin at Le Mans] died as well; it happened just a couple of months from each other. After Simonsen passed away, Sean had been filling in for him in Europe for the cars [Simonsen] had been driving with other drivers. He was very close to Sean, and it was a very tough period for us. And then when Sean passed away; it was

"We have very aggressive plans to really grow MOMO in the U.S. and have hired a marketing agency to help us with that."

two drivers all of a sudden. We carried stickers of Sean and of Simonsen in the car, and we looked around and didn't see any change coming from it. Usually in motorsport when you see a tragedy, something happens as a result. You see it a lot in Formula 1 and other series. But in this case, we didn't see any changes. It frustrated us very much, and the debut of the foundation was to try to bring all the experts together and come up with new rules, more training, safety barriers, etc. It's something that's growing very quickly. We have Scott Elkins as our COO. He's a guy who has many stars and stripes on his shoulder, and he's the right person to really take it to the next level.

Well you've also had your own close call, when you crashed at high speed into the barriers during the 2012 12 hours of Sebring.

Yeah, yeah! As a driver, you hit a lot of barriers, and you get to learn, the hard way, which ones work and which ones don't. There are a lot of opportunities at a lot of different tracks. Safety is expensive,

and a lot of tracks simply can't afford it. So we have a program, for example, that's called Adopt a Corner, where we try to match corporate donors in exchange for branding on the corners, and they've paid for certain upgrades at different racetracks. It's a page from the Adopt-a-Highway signs that you see all over the roads. So we're doing different things like that. We're also doing another program that is Race With Restrain, where we set up rental kiosks for HANS devices at tracks across America. So you go there, and for \$30 you get to rent a HANS to wear and be safer, and you don't have to have the financial burden of spending \$1,000 [buying the device] or whatever they may be. We're trying to make safety more accessible because it is expensive, unfortunately. **EC**

SOURCES
Motorsport Safety Foundation
motorsport-safety.org

MOMO USA
momousa.com

P21S® People

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WÖRTHERSEE TREFFEN CAR SHOW

THE BIGGEST VW AND AUDI SHOW IN THE WORLD **WORDS** MATT ZUCHOWSKI **PHOTOS** LUKASZ ELSZKOWSKI



One thing needs to be made clear at the beginning: There are VAG gatherings, and then there's the Wörthersee. This is not because of the ludicrously picturesque *landshaft* surrounding the lake hidden among the Austrian Alps that hosts the event. This is not even due to the world-class league projects that come here each year but are rarely to be seen anywhere else. The thing that blows the minds of people coming here and makes them want to come back every year is just the impossible size of the whole event. Once a modest, spontaneous weekend party for a bunch of Golf GTI enthusiasts, over the last 30 years, it has grown to be a giant festival cherishing beefed-up VWs and slammed-down Audis, speed, burnouts, beer, loud music, and some more beer. It would be an awful cliché to call the GTI Treffen (as the Wörthersee gathering is officially known) the mecca of VAG fans, but similarities are too hard not to be brought up. In both cases, the followers can't say they know their thing without being there at least once, so thousands of them gather once a year to go around their holy place for these cult reasons. The VAG people even have a literal granite touchstone—fittingly, in the shape of an early Golf.

It is estimated that this tranquil region inhabited by a few thousand people is flooded with more than 150,000 enthusiasts coming from all over Europe (along with one Golf on Japanese plates), but this year that number seemed to be greatly surpassed. For many miles around the lake, the only thing to be seen were the crowds hanging out, sitting in rows of deck chairs along the roads, sipping their favorite beverages while looking at the VAG all-time-greatest collection of thousands of cars, which their owners had been meticulously modifying and perfecting for the last 12 months for this very occasion. The cars also take part in

cruising around the lake, forming a one-of-a-kind exhibition, where the exhibits keep on flowing from one place to another along with the spectators. A good grasp of the local spots is invaluable, but if you do your homework before coming to Austria, you should be familiar with the main attractions in the town of Reifnitz, customs at the "Turbokurve," and the famous Eni gas station. As the cars keep on moving through the days, there's no fixed winning strategy for getting the most out of your stay—the best things may await further away in the hills, in a parking lot at a local supermarket, or in someone's front lawn.



Just one example of the crazy themed builds, we would have called this a Golf RRRRR



Sometimes all it takes to set a car apart from the crowd is the right color choice.



This GTI is reportedly wrapped in carbon fiber. Why the owner didn't build new panels is beyond us.



As the old German saying goes, the closer the official date of the event, the fewer good cars appear and the more drunk guys dancing to the techno take their place. Even if, in theory, the *Treffen* (German for “meeting”) lasts four days at the beginning of May, dedicated fans arrive two or even three weeks earlier, often coming back home before the show officially starts. Having attended the main event in the previous years, this time we chose the insiders’ way and arrived around a week before the start of this automotive equivalent of Mardi Gras. The roads were filled with hundreds of vendors with all kinds of tuner must-haves, amusement parks, concerts, dancers, and the official stands of VW, Audi, Seat, and Skoda. The VAG’s Big Four each year premiere their

wild concepts prepared especially for that meeting, forming an emotional bond with thousands of blokes who have done the same thing with their Golfs or A6s. There are few other shows where the car freaks and the biggest carmakers in the world would play on such equal rules.

The atmosphere may remind you of a laid-back pool party, but the cars are treated very seriously here. Sometimes you wonder how the hell some people managed to get cars like the brand-new Audi TTs and then had the time, money, and guts to cut it into pieces and rebuild it in a typically German style. A Cayman GT4, Gallardo, or Ferrari is not treated here as such a royalty as the numerous R8s armed with crazy body mods and superchargers. Still, a heavily modified

Volkswagen Caddy or an old T1 can gather just as much street cred here as a supercar. The “money no object” attitude applies not only to the rarest cars; a Golf with Lamborghini brakes or 20-inch Bentley rims worth more than the rest of the car is a typical example of the German sense of humor. This year, one MK7 Golf took the competition to the next level, featuring a complete body made of bare carbon fiber all the way down to the red carbon brake calipers.

On the other end, there was a B6 Audi S4 Cabrio with the body covered in the very same cognac leather upholstery as the interior, with all the diamond quilting and stitching faithfully re-created on the doors, hood, and the rest of the body. Not so spectacular but still worth noting was a MK4 Golf with a 16-valve engine and Webber rims taken from a MK2 Golf. Are we witnessing the beginning of a new trend? It wouldn’t be the first time one was born here.

One of the hottest trends this year seemed to be retro racers, the highlight of which was two early Golfs with Kamei-style body kits and a sweet track-ready Audi 80. Along with some resto-modded excellence, they formed a wide offensive of vintage cars that arrived at the lake in unprecedented numbers. Beetles, T2s, and ’80s Porsches filled a surprisingly big part of the grid.



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Bringing the indoors out. The exterior of this Audi was wrapped in leather to match the interior.




Long before crossovers were "a thing" in the US, VW was building the Golf Country on the MK2 platform.





Even more surprisingly, many of them didn't bear any kinds of modifications. Those lucky enough to walk the roads in the area saw what seemed to be about a half of the total Golf Rallye production. The same applied to its modern counterpart, the just as rare and appealingly fast Polo R, another strong candidate for a future hot-hatch classic. As the main VW feast was still a few days ahead, some drivers dared to bring their BMWs, Subarus, or AMGs. There's no place for cars other than VAG products during the official days, though—appearing in one would be like wearing a Real Madrid jersey at an FC Barcelona sector of Camp Nou. Ask the poor women who took the wrong turn and accidentally arrived here in a Fiat last year...

The event is very popular with the local *Polizei*, too, but for entirely different reasons. They show little understanding for the urgent need of burning the tires or racing on local roads, so the real fun starts here only after midnight. Be lucky and you'll see a good show with a quality soundtrack composed by blow-off valves, loud exhausts, and turbocharged VR6s revved like there was no tomorrow. Be unlucky and you'll get caught by the guys on white motorcycles with blue lights flashing, and be prepared to lose lots of euros.

No matter whether you like risking it or not, even without the underground bit, the Wörthersee is a place that recalibrates the idea of a car gathering. It's hard not to be impressed with everything from world-leading projects to '80s Golfs, and all the sheer madness that surrounds the cars. Quite possibly, it's the biggest—and the greatest—car show on our planet. 



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“It’s hard for enthusiasts to comprehend that the DCT box can shift faster than the USD M programming without increasing the harshness of the shifts.”



AFFORDABLE E9X M3 UPGRADES: PART III

REAL-WORLD MODIFICATIONS THAT BOOST PERFORMANCE WITHOUT BREAKING THE BANK: A WIDER STANCE AND AN OEM EURO REBOOT

Words and Photos Justin Fivella

Up until this point in our E9X adventure saga, we’d acted solely on the part of function with little concern for form. OK, who are we kidding? Some of our engine upgrades were as pretty as they were potent. But this month, we decided that aesthetics and creature comforts were just as important as performance and price, and to be honest, we’re beyond happy with the subtle but substantial gains from our well-placed mods.

HERE’S WHAT YOU’VE MISSED SO FAR

For those just tuning in, here’s what you missed. Don’t worry, though, the full stories can be found on the *ec* website. Part I kicked off with an additional 20 whp for just \$600 thanks to Macht Schnell Performance Underdrive Pulleys and a matching Stage 2 Intake Charge kit that significantly boosted power without breaking the bank. With the inlet side of the S65 uncorked and parasitic drag greatly reduced, we jumped into Part II by relieving restriction downstream and bringing the car into a perfect state of tune. A Macht Schnell X-pipe and Mackin Extreme Products (MXP) Mevius stainless steel rear exhaust section helped unlock additional airflow, and ESS Tuning E9X M3 NA E-Flash

ECU Performance Software helped maximize the air/fuel ratio and timing. The new mods pushed rear-wheel power on our stout E90 test subject to a staggering 399 hp and 286 lb-ft at the wheels on 91-octane pump gas for total gains of 47 hp and 24 lb-ft. So this month, we decided to add some form and function by paying another trip to the BMW gurus at European Auto Source (EAS) for another round of budget-friendly E9X upgrades.

SLICK SOFTWARE UPGRADES, BUT NOT HOW YOU MIGHT THINK

Even before we’d concocted the hare-brained idea of adding 50 whp to our S65-equipped M3 without breaking the

budget, we’d contacted Tom Guagliardo at EAS in search of his recipe for affordable E9X upgrades. His response surprised us.

“If your budget is really tight, our Individualization and Programming Opinions (CIP) offers a lot of bang for your buck in regards to driving dynamic improvements, which can be followed up with bolt-on engine upgrades and then some quality wheel spacers and a stud conversion to further improve the driving dynamics,” he explained.

And so, Part III was born. We’ll start with the EAS Coding, which is typically called Individualization and Programming opinions (CIP) or PROGMan—an abbreviation for Programming Manager. This is a BMW software system that connects to the OBDII port with the appropriate cable and can update the entire vehicle, not just the DME/ECU, but rather the 20-25 subsystems found in modern BMWs.

Without delving into a computer science

Our LeMans Blue '11 DCT-equipped E90 has been a willing partner throughout the duration of our budget-friendly mod series, albeit now with an additional 50 whp and a whole lot more personality. This month, we widen the stance and add factory binary code from across the pond for quicker shifts and more creature comforts.

dictation, when a modern BMW goes in for “updates,” the CIP is generally what the dealer is referring to, and these updates can be anything from revised transmission and engine programming to simple additions like dimmer or brighter interior lights, new electronic settings for the HVAC, or really anything that is computer controlled. But what if enthusiasts got a hold of such a powerful device? What would that mean for the performance community?

“We’ve been performing the CIP for quite some time now and it’s not only allowed us to add numerous custom features but also different settings and features originally reserved for BMWs in other countries,” Guagliardo said.

For the full list of what can be affordably added to your modern BMW, see the attached sheet. In general, some popular items that can be deleted are the seatbelt chime and BulbCheck for LEDs. You can disable the iDrive disclaimer and remove the speedometer and fuel-mileage correction factors, the DRLs, the auto-dimming mirror, and much more.

But the CIP isn’t all about deleting items; it’s also about adding them.

“Many people love small but effective features like the one-touch up windows after the doors have been opened, closing the windows and folding the mirrors with comfort access, using the foglights with the high beams, auto-unlock with key removal, the EU double-blink hazard lights, increasing the Angel Eye brightness, increasing the dB level of the alarm chirp, adding fuel stop locations on the nav, and much more,” Guagliardo said.

The list of small but highly impactful coding convenience upgrades is a mile long, but the CIP is far more capable than just enhancing creature comforts. It can add serious amounts of performance for very little money.

“Some of the most popular coding upgrades are the Euro DCT coding and the Euro M-Dynamic Mode (MDM) programming, which completely transform the USD M E9X M3s,” Guagliardo said.

Not to take anything away from all of the stellar upgrades we’ve done thus far, because, to be honest, adding 50 whp on pump gas and under a tight budget is just bonkers, but the Euro DCT and MDM programming could quite possibly be one of the best additions of this entire series.

“It’s hard for enthusiasts to comprehend that the DCT box can shift faster than the USD M programming without increasing the harshness of the shifts until they try it for themselves and see that it’s a whole new ballgame,” Guagliardo said.



The Macht Schnell Competition Stud Conversion Kit comes with studs that are hardened and tempered to a strength class of 10.9 or 10 according to DIN/ISO standard 898 and meet statutory requirements in all countries. In other words, they’re as strong as they are trick. A quality stud conversion is much stronger than the inconvenient OEM lug studs that make wheel changes a balancing act at best. They’re available in 45-, 75-, and 90-mm lengths with 12mm x 1.5 or 14mm x 1.25 diameters with a 17mm hex nut and cone seat.



Wider is better when it comes to track width—and when the budget won’t allow wider wheels, an affordable alternative is quality wheel spacers like the Macht Schnell Competition Spacer Kit, which pushes the stock wheels out anywhere from 3 mm to 20 mm in seven increments to fill the wells and widen the stance. These units are made from 6061-T6 aerospace aluminum and are also hardened and tempered to the same specifications as the lugs.



We paid a visit to Bimmer aficionados at European Auto Source (EAS) for help with the install. Here, Sam Morin can be seen removing the factory lug studs.



The pain starts as the last stud is removed, when the wheel is teetering from a single stud and you only have one free hand because the other is holding a tool.



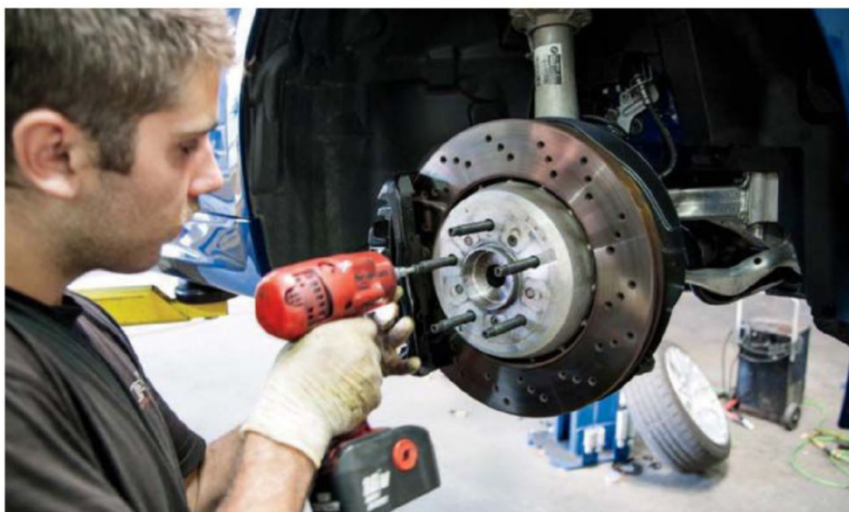
Now we move onto the Macht Schnell Wheel Spacer installation. Keen eyes will note that the studs aren't yet installed in this photo; this was done so it was easier to apply the anti-seize to the hubs.



Before installing the 18mm front spacers, we used a soft wire brush to clean the mating surface of the hub so everything would sit flush.



We then repeated the same process for the rear, except with a slightly narrower 15mm spacer.



Now Adam Koch begins the installation process of the Macht Schnell wheel studs. Thankfully, they have hex-head (Alan) inserts that make threading the studs into place a simple affair. Don't forget the Loctite on the threads that attach to the hub.

For starters, the Euro DCT software is programmed to start the car in D2 and remembers the previously selected S mode, which—if you ask me—is the best combo. This means the car will start in fully automatic mode for daily drudgeries and with the poke of a button, it will revert back to your previously selected manual mode for the best of Dr. Jekyll and Mr. Hyde.

"The USDM cars start in S3 and only remember the D mode, which is backward because most people don't want to start in a fully manual mode and have the car only remember the automatic settings, which means every time the driver wants control over the manual settings for aggressive driving, they have to toggle until they find their desired position," Guagliardo said. It also means that every morning when you leave for work, you're forced to either shift on your own or move the selector back into automatic mode. Also, should a family or friend borrow the car who's not a gearhead, well, they could happily bounce off the rev limiter on a cold engine because they didn't know how to manually shift out of first. Yikes, just the thought of that makes us cringe.

"It's unbelievable how much the Euro DCT software has changed the car. The shifts are faster and smoother than they've ever been, and I didn't think the DCT programming could get any better. It's seriously one of my favorite additions to date," said Jeremy Stanton, owner of the E90 M3 test subject. Along with lightning-quick and buttery-smooth shifts, the Euro MDM software also adds another degree of adjustability during spirited driving.

"The USDM cars have an aggressive traction control that's basically on or off, which means drivers are either free to spin their cars out or hampered almost completely, but the Euro MDM software allows for a setting between the two that allows for more wheelspin and greater degrees of slide angles before the traction control

steps in," Guagliardo said.

In our opinion, it's like having your cake and eating it, too, since enthusiasts are free to explore car control without fear of spinning off-track because the traction control will reign things in when you've overstepped your abilities. Hey, all but the best of us have done so, whether we want to admit it or not.

To sweeten the deal, EAS can perform all of the aforementioned CIP upgrades in under an hour without costing a fortune at its Southern California facilities. And should you change your mind on the latest additions, another trip to EAS can revert your car back to stock.

STOUT STUDS

With some badass Bimmer binary code now in effect, next we were after a solution to the cumbersome OEM lug studs along with a wider track to fill the stock fenders.

"The OEM wheel studs make mounting wheels a chore, especially with wheel spacers, since you need to lift and balance the wheel, then align the wheel with the hub, and then thread the lug stud in place. But with a wheel stud conversion, you can simply hang the wheel on the studs, seat it, then thread and torque the lugs," Guagliardo said.

The OEM lug studs may have a purpose, but most race cars and many performance vehicles make the swap to conventional studs for a multitude of reasons. The most common are because they're stronger and make wheel swaps a cinch.

Macht Schnell makes it easy with its Competition Series stud conversion. This burly kit comes in 45mm, 75mm, or 90mm lengths and features studs that have been hardened and tempered to a strength class of 10.9 or 10 according to the DIN/ISO standard 898 that meets statutory requirements in all countries—in other words, they're beyond strong.

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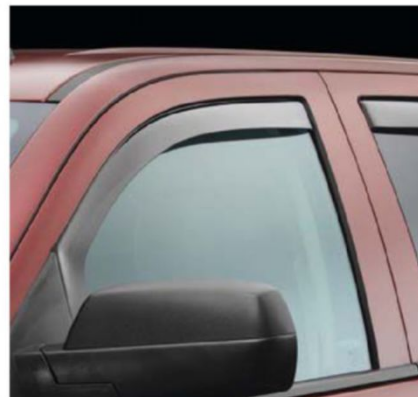
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Adam Koch of EAS enjoyed the fact that with the Macht Schnell lugs in place, it was easy peasy to hang the wheel for the install.



The OEM offset tucked the front wheels so much that the tops of the fenders actually shaded the wheels, but the new Macht Schnell 18mm wheel spacers solved that sunken-in look by pushing the wheels to the edges of the outer fender.



It's amazing what an additional 15 mm of track width does for the rear. Look at the before-and-after shots of the rear. How's that for a sizable improvement?

"The 45mm-length studs can accommodate close-ended lugs and locks without spacers, the 75mm studs can utilize up to 12mm spacers, and the 90mm units can accept up to 20mm spacers," Guagliardo said. Other noteworthy features include a bullet tip that prevents cross threading, a black zinc coating for additional strength and corrosion resistance, along with a hex insert for an easy install. The units are available in a 12mm x 1.5 or 14mm x 1.25 for different BMW models.

A WIDER STANCE

Wider is better (within reason, of course)

when it comes to both the track width of your car and the width of the rims and tires, but one is much cheaper and easier to remedy. "Quality wheel spacers are a great way to widen the track and better fill the fenders of your BMW without spending a ton of money," Guagliardo said.

That's right, we can widen the stance and fill the stock fenders with wider wheels, but in this case, our pockets weren't that deep, so the next best thing were some quality wheel spacers.

We know what you're thinking and we're going to dispel all doubts right out of the gates; these aren't the flimsy, fatigue-prone



The new 90mm studs are form and function at their finest.



Behold, the EAS Coding, Individualization, and Programming options (CIP) that allow enthusiasts to personalize the coding in their BMWs at an affordable rate. The EAS platform allows users to do such things as remove the seatbelt chime, add one-touch Window Up while the doors are open, fold the mirrors with Comfort Access, and even add Bluetooth or Alarm retrofits, along with nearly 100 additional features. For the performance folk, it can also delete the EDC, clear engine or VANOS adaptations, add the Euro DCT and MDM software, and much more. It's the opportunity to add all the cool coding that came on BMWs from across the pond.

wheel spacers of a bygone era that earned wheel spacers a bad name, but rather high-quality components that are up to the task of street driving and hot lapping.

"The Macht Schnell wheel spacers are made from 6061-T6 aluminum, hardened to the same specifications as the wheel studs, and machined to exact tolerances for a secure and safe fitment," Guagliardo explained.

Beyond their hardy construction and precisely machined finishes, the units also feature chamfered edges to ease the installation and removal process, along with an anodized finish that's as tough as it is pretty.

As I'm sure you already know, pushing the wheels to the outmost corners of the chassis helps decrease body roll and improves handling characteristics. Truthfully, we're talking minute differences that only the best drivers can feel from the driver's seat, but still, every bit counts. And then there's the aesthetic part of it.

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- M30SC Module
- AMP/Audio Amplifier
- CIC/ODC Drive
- CAS Car Access System
- RAD2/Radio Module

Here's a list of the coding options EAS can perform on most late-model BMWs. In our case, we added the Euro DCT software, which made huge improvements in shift speed, and instead of defaulting to S3 mode and remembering the D mode like the standard USDM cars, it defaults to D2 and remembers the S mode. This means it starts in automatic mode for daily drudgeries but remembers the sport mode settings for when it really matters. We also opted for the Euro MDM software, Auto-up with the doors open, as well as deleted the nav nanny and the annoying seatbelt chime, among a few other upgrades.



The EAS Coding, typically called Individualization and Programming opinions (CIP) or PROGMAN, short for Programming Manager, is a BMW software system that can update the entire vehicle, not just the DME/ECU, but rather the 20-25 subsystems found in most modern BMWs.



Now, with a wider stance, extended lugs, and pretty pipes poking out of the rear, our E90 M3 looks a whole lot better without breaking the bank.



Another one of the cool features included in the EAS Coding sheet was the ability to brighten the Angel Eyes by 10 percent and delete the orange corner LED. As they say, the devil is in the details.



Here's a look at the fenders filled to the brim now that the stock wheels have been pushed outward another 18 mm up front and 15 mm out back.



Nothing says, *because race car*, like a set of extended studs and open lugs.

The MXP stainless back system looks great, and when paired with the Macht Schnell X-pipe, it sounds so wicked you'd swear you were in a GT2 car.

"We find that running 18mm spacers up front and 15mm spacers out back fills the fenders nicely for an aggressive look," Guagliardo explained. And he wasn't kidding, as the wider track got rid of the overhanging fenders and pushed the factory wheels to the outermost lips of the fenders. Although we chose the aforementioned spacer combination, should you want more or less offset, Macht Schnell offers anywhere from 3 mm to 20 mm of additional width in seven increments; just make sure you chose the appropriate length lugs for your chosen spacers.

DRIVING IMPRESSIONS

If you've been with us since the start, then you already know that we've completely transformed our E90 M3 from a mild stock car to a budget-friendly, fire-breathing super sedan. Seriously, words can't explain how much more engaging the modified example is with an additional 50 whp, some 20 pounds lighter and with boisterous lungs so loud and so hair raising that you'd swear you were behind the wheel of a race car when the go-pedal is matted.

We knew the previous two installments created big shoes to fill, but the mods this month were every bit as impactful as the first duo.

"I can't believe how much better the car behaves with the Euro MDM and DCT programming. Seriously, it's insane how much more responsive it is and how the shifts are far quicker but no longer upset the car mid-corner should I grab a gear," Stanton said.

The plethora of creature comforts like the deletion of the annoying nanny screens or chimes is also welcome, as are the lack of annoying orange corner lights and now noticeably brighter Angel-Eyes.

"The stud conversion makes wheel changes easy, and the spacers perfectly fill the fenders now; it's unbelievable how so few mods can make such a big difference," Stanton said.

We couldn't have said it better ourselves. Prior to this build, we'd all but written off the term *budget* and *E9X M3* in one sentence, but after some help from key companies like Macht Schnell, ESS Tuning, European Auto Source, and Mackin Extreme Products, we're now believers that a properly speced combo of affordable parts can truly transform the fourth-generation M3 without breaking the proverbial bank. **EC**

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UPDATE 1

'15 VW GTI

GETTING MORE FAMILIAR AND ADDING MORE FUN

WORDS Michael Febbo

Our long-term '15 Volkswagen GTI just passed the 6,000-mile mark, and it has been nothing but smiles so far. Our sister publications Motor Trend and Automobile both have long-term GTIs as well, all equipped differently, so I have the opportunity to satisfy second-guessing my choices when necessary. Motor Trend's is a white, DSG, Autobahn without performance package but with Driver Assistance. Automobile's is a Tornado Red, base, manual, Performance Package. Amongst us, we have everything but DCC.

As of this point, still no regrets for ordering the car with DSG. I do, however, gaze longingly at the base car's plaid seat upholstery. I am just not sure there is a better interior material out there and I wish VW would make it available on all trim levels. I also long for the solid metal roof of the base car. I don't necessarily dislike the sunroof, but if I had a choice, I would order it without.

As I feel we have a good handle on how the car is stock, we have made some very minor changes to the car. First, we decided to dip into the VW bin with parts available either online at drivergear.vw.com or even at your local dealership. Although our GTI came equipped with some pretty nice

floor mats, we have opted for the industrial strength Monster Mats to protect the carpet. I've had these in several VWs and I love them. The set is \$104 but will likely last the life of your car. They clip in with the factory mounts and can be hosed if, or when, it is necessary.





To complement the Monster Mats, we got a Muddy buddy trunk liner. Again, it seems like a steal at \$109. It is molded to the shape of trunk and has raised sides, so if whatever is in your trunk spills, it will stay contained on the mat. Sitting on top of the Muddy Buddy is VW's Roadside Assistance Kit. Inside you have everything from a multi-tool to jumper cables and even a safety triangle, an emergency blanket, and Band-Aids. Even if you don't buy the VW kit, every car should have something like this.

Lastly from the VW counter, we have probably the best dealer accessory we have ever seen or heard of. The Pop-In Sun Shades fit in the rear door and hatch windows. Most higher-end cars have roll-up shades to cover the windows to keep out the hot sun and add a bit of privacy. VW doesn't offer those, so instead, these shades are fit inside the window opening, secured with clips, and cover the entire window area, instead of just most of it, like the roll-up options. This is the best alternative to window tint I've ever seen. At \$265 for the set, I can't recommend them enough. They took roughly 10 minutes to install with the supplied tool.

How could we make changes without adding some performance parts. We did, however, start off slowly. First, we added a set of Bilstein PSS10 adjustable damping coilovers to give us a decent amount of tuning options in terms of ride height and damping performance. Spring rates feel a little stiffer than stock, and damping rates range from substantially softer than stock to moderately stiffer.

We decided on a ride height roughly 30 mm lower than stock. Surprisingly, our GTI seemed to sit the highest of any of the cars mentioned earlier, so mileage may vary. I've run through different damper settings and so far the best all-around setting I've found is 5 front and 8 rear. I use this for commuting. I've used it for canyon driving, but I haven't had a chance to get it to the track yet for testing. My hunch is that I will go a bit stiffer for track work to try and control some of the oscillations the car gets over bumps while also loaded up from cornering.



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SPOILER ALERT

I will call these teasers, but some might call them spoilers (in the TV or movie sense). These parts are sitting on my desk waiting to go into the car. The idea is to test the car as described earlier, then add these and test again, to make deciphering what products are responsible for which result.

» P3Cars VIDI Performance Gauge

This isn't so much a performance improvement as it is an analytical tool. We can use this to track changes in boost, engine temperature, and so on in real time. We are told installation and operation are straightforward and will change our lives forever. We will let you know in the next project update.

» Neuspeed Power Module

We know the Power Module gave us great results on our 1.8t-powered Passat. Neuspeed is claiming even greater gains on the 2.0t, so I am anxious to get this on the car and to the track. Our Passat shaved 0.9 seconds off its 0-60-mph time. I am hoping this might grab us a full second on my GTI. Installation doesn't seem quite as simple as on the Passat, but still easier to remove for dealership visits than an ECU flash.

» Neuspeed P-Flo

If we can't get that full second off the 0-60-mph time with just the Power Module, we are hoping that opening up the car's breathing a bit will push us past our goal. From past experience, we know the P-Flo is well built, adds some nice induction noise, and usually frees up a few ponies, but the real beauty is CARB Certification sticker that means this intake is 100 percent street legal in the great state of California.

The biggest aesthetic difference to our GTI has come from the addition of the Neuspeed RSe52 wheels. The fitment is a bit on the cautious side at 18x8 inches and a 45 mm offset. The stock Austin wheels are 18x7.5 with a 49 mm offset. We could probably go with another half-inch of width and a few more millimeters less offset for a more aggressive look. As they sit, however, we've had absolutely zero rubbing issues, so we can't complain about that. They look amazing on the car, the gunmetal color is a nice contrast on the white car, and I've always been a sucker for a nice, clean, five-spoke design. They weigh in at 20 pounds, which makes them about 5 pounds per wheel lighter than stock.

I was tempted to add the stickiest tires I could find, but since this is still my daily driver, I decided to go with a performance tire that would be good in all-around conditions. The Falken Azenis FK453 is an ultra-high-performance tire designed with GT cars in mind. I used the RT615K on our project Fiat, and as much as I liked it, I wanted something a bit more refined, at least for now. We also decided the factory 225/40-18 would probably be a safe bet as well.

Overall, the combination of coilovers, tires, and wheels has been nothing but a success. The ride quality is similar to stock, but transient response has been greatly improved. Because of the ride height, we still have plenty of suspension travel, so no compromises there. The lightweight wheels and grippier tires give a far more planted feel, even in daily driving. The unsprung mass is clearly easier for the suspension to control, and we noticed this even more so with stock dampers and springs. I will be trying different options for suspension after we get this version of the car out to the track for actual test numbers. The GTI you see here is just the beginning. **EC**



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E36 BMW M3 '95-'99

ALMOST EXOTIC, POTENTIALLY ATTAINABLE

Words Colin Ryan

“It’s not really worth trying to mod more power out of the engine—that would involve a lot of expense for not many gains.”

The '15 M3 comes with 425 hp. Turbos are becoming more commonplace. So a naturally aspirated straight-six making 240 hp might be thought of as old hat. But not if it’s under the hood of an E36 M3. This car is a supporting wall in the house that BMW built. A house that stands for rear-drive dynamics, autobahn-blasting, and unarguable automotive class. And anyway, unless you’re a track-day fiend, isn’t it more fun to get close to the limits of a car like this than have something way more powerful and never get the chance to really stretch its metaphorical legs?

The E36 is the second generation of M3 and came to the United States from 1995 to 1999. Most are coupes, although sedan versions were made from 1997 (when the auto transmission option disappeared from the coupe) to 1999, while convertible versions were made from 1998 (when all versions got side airbags as standard).

It arrived with a 3.0L engine, going up to 3.2 in 1996. Horsepower stayed the same but torque bumped up from 225 lb-ft to 236. Both versions are reliable. They should see 200,000 miles on the odometer with regular maintenance and using good-quality oils. A five-speed manual is the basic transmission, with a five-speed auto option. A limited-slip differential is standard equipment, along with 17-inch alloy wheels.

It’s not really worth trying to mod more power out of the engine—that would involve a lot of expense for not many gains. Likewise with the suspension. It came out of the factory with a ride that won’t agitate, but the perfectly poised and balanced chassis can also provide enough feedback and finesse to make canyon roads wildly addictive.

It’s best to consider aftermarket upgrades when it’s time to replace worn-out factory parts. The trouble is that with the E36’s ever-advancing age, a



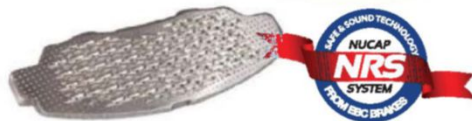
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lot of parts are being worn out and it will only become more difficult to find a clean example.

Gordon Arnold and Jay MacNamee of Bavarian Autosport (bavauto.com or (800) 535-2002) have a wealth of knowledge that they have been kind enough to share with us. Let's look at the '95 model year first.

These cars "do not employ OBDII engine management. This may be important if modifications are planned that could cause problems with OBDII compliance." They also "use standard E30/E36 geometry on the front control arms along with offset control arm bushings." Bavarian Autosport says it's possible to use Meyle heavy-duty standard E36 control arms that have no rubber in the outer ball joints as alternatives to the OE M3 parts.

The differential ratio of manual-trans '95 models is 3.15:1. It's 3.23:1 for all other years (for slightly better acceleration) and all automatic versions.

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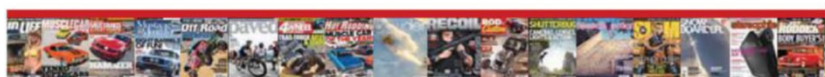
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TECH SPEC

'95-'99 BMW E36 M3

LAYOUT

Longitudinal front engine, rear-wheel drive

ENGINES

3.0L, DOHC, 24-valve, inline-six (1995); 3.2L, DOHC, 24-valve inline-six (1996)

TRANSMISSION

Five-speed manual/five-speed automatic

SUSPENSION

Struts, coil springs, antiroll bar (f); central arm axle w/longitudinal and double-track control arms, coil springs, antiroll bar (r)

PERFORMANCE

PEAK POWER

240 hp @ 6,000 rpm (3.0); 236 lb-ft @ 3,800 rpm (3.2)

PEAK TORQUE

225 lb-ft @ 4,200 rpm (3.0); 236 lb-ft @ 3,800 rpm (3.2)

0-60 MPH

6.1 sec.

TOP SPEED

155 mph

Our Bavarian specialists also have some general observations: look for rust staining and/or bubbling in all areas, but especially around the trunk, rear quarter panels, rocker panels, jack points, and front antiroll bar mountings.

When sniffing around under the hood, pay attention to: VANOS rattle (the sound varies with engine speed and tends to go away at higher revs); a tapping sound at idle could be lifters in need of adjustment; the expansion tank overflow hose is only held in place by plastic clips that can break and let the hose come into contact with the fan. And it's never good when something hits the fan.

Interior-wise, Arnold warns us that de-lamination occurs with the front door panels and the headliner. Pixels in the instrument binnacle go AWOL because of faults in the ribbon cable between the circuit board and the display. The digital climate control units in '96 to '99 models have a tendency to fail. Check the smooth operation of the one-touch windows because there might be guide track friction or a weak motor. Water in the passenger footwell could signal clogged cowl cavity drains, which might even lead to water getting into the ECU.

Our research has also found that the front end can easily be afflicted by stone chips and restoring the paintwork could run to a few thousand bucks. This means really foggy headlamp lenses as well. European versions have glass lenses that are better. If you're replacing them, why not go for a xenon upgrade? Inspect the windshield, too. Scraped alloy

wheels are another way to knock down the asking price—and make sure the spare is part of the set. Incidentally, the driveline shares a lot of components with the E36 325i. Other things to look out for and consider replacing are the water pump (actually, the whole cooling system is worth putting under the microscope), rear shock mounts (adding reinforcement plates will be a good move), rear trailing arm bushings, driveline mounts, and power steering fluid leaks. Arnold and MacNamee recommend compiling a checklist prior to viewing any potential purchase so nothing gets overlooked.

A '97 coupe in good condition bought from a private party is blue-booked at \$4,178. Expect to pay at least a couple grand more in getting something like that into proper shape—if you can find one. The cheapest example we unearthed on a major classifieds site was a '99 convertible with an asking price of \$14,000.

The thing about an M3 is that it's the archetypal driver's car. Most examples will have been driven, probably quite hard from time to time. If a seller says "one careful lady owner," then you're going to need more salt than a pinch. So it's the luck of the draw regarding how mechanically sympathetic and diligent the previous owners have been. Use a mixture of common sense, instinct, and a specialist inspection, and the odds will be stacked in your favor. **BC**

Profound thanks to Gordon Arnold and Jay MacNamee at Bavarian Autosport (bavauto.com).

The TSW logo is rendered in a bold, italicized, black sans-serif font. A red and black graphic element, resembling a stylized wing or a checkered flag, is positioned at the end of the letters.

TSW



The new Bathurst RF wheel, shown above with the Silver - Mirror Cut Face finish is available in 17, 18, 19, 20 and 21 inch staggered fitments. The Bathurst RF features a brilliant starburst of ten ultra narrow beveled spokes that is as visually light as its actual weight. The Bathurst RF is manufactured using a highly advanced production technique called Rotary Forging. The rim of the wheels is forged at high pressure while the wheel is spun at high speed. This alters the molecular structure and enhances the strength of the alloy. The benefit is a much lighter weight than a regular cast wheel. Most importantly, the weight saving is in the outer rim of the wheel which dramatically reduces rotational mass and enhances vehicle performance. Visit our website for more details and to view the complete line of one-piece, multi-piece and Rotary Forged® wheels.



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